

Social Media Driven Green Marketing and Consumer Purchase Intention: The Mediating Role of Environmental Awareness

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Abstract

In recent years, firms have progressively sought to gain competitive advantage and market share by pioneering the introduction of environmentally sustainable products, driven by heightened ecological awareness and innovation. However, it is still unclear how much consumers' awareness of sustainable innovation and green marketing strategies translates into actual purchase intentions. On the other hand, the current study examines how social media affects green marketing and consumer purchase intention using environmental awareness as a mediating variable. Convenience sampling and a structured questionnaire were used to collect data from 300 respondents in the Vellore district. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to explore the intricate interactions between the constructs after the suggested study framework was empirically investigated. The results exemplified that the social media construct has a significant effect on green marketing and a favorable impact on customer purchase intention as well as environmental awareness. Furthermore, the relationship between social media green marketing and consumer purchasing behaviour is partially mediated by environmental awareness, which also greatly increases purchase intention of consumers. Collectively, these results highlight the essential role of awareness-driven digital marketing strategies in endorsing sustainable consumption and strengthening consumers' inclination toward environmentally responsible purchasing decisions.

Keywords: Consumers Purchase Intention, Environmental Awareness, Green Marketing, Green Products.

Introduction

Environmental sustainability has become a pressing global concern because of climate change, resource depletion, pollution and ecological degradation (1, 2). Growing environmental awareness has encouraged firms to redesign products and processes and adopt marketing practices that respond to demand for environmentally responsible goods (3, 4). Green marketing has therefore gained importance as firms seek to communicate environmental benefits, strengthen brand credibility and encourage sustainable consumption. Consumer environmental concern, product attributes, green brand knowledge and perceived value have been identified as important factors shaping green purchasing decisions (4-6). The rapid development of digital technologies has further changed how firms communicate sustainability. Social media platforms such as Facebook, Instagram and YouTube provide interactive and personalised channels through which firms can communicate

environmental information, promote green products and engage consumers (1, 7, 8). Social media marketing can influence consumer attitudes and purchasing behaviour through repeated exposure, interaction and information sharing (9-11). Within this context, social media green marketing (SMGM) refers to the use of digital platforms to communicate eco-friendly ideas, promote sustainable products and influence consumers' green purchase intentions (1, 10-12). Previous studies indicate that social media can strengthen green product awareness, brand involvement, environmental responsibility and purchase intention, particularly among younger and digitally active consumers (13-19). Environmental awareness is also an important psychological factor in green consumer behaviour. Consumers who are more knowledgeable about environmental problems and the consequences of consumption are more likely to respond positively to green marketing messages and develop

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favourable purchase intentions (20-22). Evidence suggests that environmental awareness and knowledge can strengthen the relationship between green marketing and purchase intention, while environmental attitudes, perceived value, trust and subjective norms also contribute to green purchasing decisions (23-28). These findings indicate that exposure to green marketing alone may not fully explain purchase intention; consumers' internal environmental understanding may provide an important mechanism through which marketing information is translated into purchase-related decisions.

Green marketing is particularly relevant because consumers' responses depend not only on the environmental claims communicated by firms but also on whether those claims are understood and considered credible. Studies have shown that green communication can improve brand image and trust, while transparency and reliable sustainability information can encourage consumer participation and purchasing intentions (5, 6, 15). At the same time, social media enables consumers to obtain, share and evaluate environmental information through continuous interaction with brands and other users (14, 16). This interactive environment makes social media an important setting for understanding how environmental information becomes part of consumers' decision-making processes. Consequently, examining environmental awareness as an intervening mechanism can provide a clearer explanation of why some consumers translate exposure to green marketing messages into stronger purchase intentions while others may not.

Although considerable research has examined green marketing, social media, environmental awareness and green purchase intention, important gaps remain. Much of the existing literature investigates these variables as separate or direct relationships, with fewer studies examining how social media green marketing influences purchase intention through environmental awareness (23). Evidence is also concentrated in developed markets and major metropolitan settings, leaving relatively limited understanding of these relationships in emerging and semi-urban contexts (24). In particular, the role of social media as a green marketing channel within the Vellore district remains underexplored. Addressing this gap is important because

consumers increasingly encounter sustainability-related information through digital platforms, while their environmental perceptions and purchasing responses may vary across regional contexts.

The theoretical basis of the study draws on the Theory of Planned Behaviour (TPB) and the Stimulus-Organism-Response (S-O-R) framework. TPB identifies attitudes, subjective norms and perceived behavioural control as important determinants of behavioural intention and has been widely applied to sustainable consumption research (8, 14, 20). The S-O-R perspective further explains the proposed mediation process: social media green marketing represents an external stimulus, environmental awareness represents the internal cognitive response and consumer purchase intention represents the behavioural response. Thus, environmental awareness is expected to provide a psychological pathway through which green marketing information is converted into purchase intention. Previous research supporting mediation through environmental knowledge and related cognitive-affective constructs provides a basis for this proposed relationship (27, 28).

Accordingly, this study examines the influence of social media green marketing on consumer purchase intention, with environmental awareness as a mediating variable, among consumers in Vellore district, India. Specifically, the study aims to:

- a) assess the effect of social media green marketing on environmental awareness;
- b) examine the influence of environmental awareness on consumer purchase intention;
- c) evaluate the direct effect of social media green marketing on purchase intention; and
- d) test the mediating role of environmental awareness.

The study contributes by integrating these constructs within a single mediation framework and providing empirical evidence from a regionally underexplored emerging-market setting using PLS-SEM.

Based on the preceding literature and theoretical arguments, the following hypotheses were formulated:

Ho1: Environmental Awareness (EA) influences Purchase Intention (PI).

Ho2: Social Media Green Marketing (SMGM) influences Environmental Awareness (EA).

Ho3: Social Media Green Marketing (SMGM) influences Purchase Intention (PI).

Ho4: Environmental Awareness (EA) mediates the relationship between Social Media Green Marketing (SMGM) and Purchase Intention (PI).

Methodology

The current study examines the causal relationships between digital communication and consumer psychology using a quantitative research methodology (29). Convenience sampling was used to gather primary data from 300 respondents in the Vellore district, assuring accessibility while preserving contextual relevance. This approach was adopted primarily due to practical constraints of time, cost and respondent accessibility within a semi-urban district setting and its use is consistent with comparable exploratory, theory-testing green-marketing studies of similar scope (29, 30). While this approach improved accessibility and response completion, it does not involve random selection from the underlying population and therefore carries an acknowledged risk of selection bias; this trade-off and its implications for the generalisability of the findings, are discussed further in the Limitations and Future Scope section. Data was collected using a structured questionnaire, guaranteeing consistent and trustworthy responses. The second segment of the instrument used a five-point Likert scale ranging from "strongly disagree" to "strongly agree" to evaluate the study constructs, whilst the first segment collected demographic data about green consumers.

The adequacy of the sample size was verified using two complementary approaches. First, applying the ten-times rule commonly used in PLS-SEM research, the minimum required sample size is ten times the largest number of structural paths directed at any single construct in the model (29). Purchase Intention receives the largest number of incoming paths in this model, with two predictors (Social Media Green Marketing and Environmental

Awareness), yielding a minimum recommended sample size of 20. Second, a G*Power computation for a linear multiple regression with two predictors, assuming a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$ and a statistical power of 0.95, indicates a minimum required sample size of 107. The achieved sample of 300 respondents comfortably exceeds both benchmarks, supporting the adequacy of the sample size for the structural model estimated in this study.

Partial Least Squares Structural Equation Modelling (PLS-SEM) was utilised for structural relationship analysis and hypothesis testing. The primary measure of model fit was the Standardised Root Mean Square Residual (SRMR), with values less than 0.08 considered acceptable. Furthermore, the Normed Fit Index (NFI) was investigated, with values closer to one suggesting greater model fit. This method is capable of handling mediation effects and is especially appropriate for complex predictive models (29). Environmental awareness functions as a mediator in the proposed model, working as a psychological process that links the dependent variable, customer buying intention, to the independent variable, social media green marketing. The significance of route coefficients and indirect effects was assessed using bootstrapping techniques (29, 30).

Data Analysis and Interpretation

Demographic Profile of the Respondents – Percentage Analysis

The first part of the questionnaire consists of the demographic profile of the green consumers and it was interpreted using the percentage analysis, as shown in Table 1.

Table 1 summarises the demographic profile of the 300 respondents included in the study. It presents the distribution of respondents by gender, age, educational qualification, occupation and monthly income. The table provides the contextual characteristics of the sample used for the subsequent structural analysis. The distribution also indicates the diversity of respondents across major demographic categories.

Table 1: Demographic Profile of the Respondents (Green Consumers, n=300)

Variables	Category	Frequency (F)	Percentage (%)
Gender	Female	162	54.00
	Male	138	46.00
	Total	300	100
Age	Below 25 years	36	12.00

	25 to 35	148	50.0
	36 to 45	96	32.0
	Above 45 years	20	6.0
	Total	300	100
Education Qualification	School level	28	9.3
	Under Graduate	112	37.3
	Post Graduate	124	41.3
	Professional	36	12.0
	Total	300	100
Occupation	Self Employed	96	32.0
	Government Employee	104	34.0
	Private Employee	62	22.0
	Professional	38	12.0
	Total	300	100
Earnings Per Month	Below 20,000	62	21.0
	20,001 – 40,000	96	32.0
	40,001 – 60,000	74	24.0
	Above 60,000	68	23.0
	Total	300	100

The demographic profile of the 300 respondents indicates a fairly balanced sample with a slight female majority (54%). Most respondents belong to the 25–35 age group (50%), followed by 36–45 years (32%), showing that green consumption is largely driven by young and middle-aged adults. The sample is highly educated, with 78.6% holding undergraduate or postgraduate degrees, suggesting strong awareness of environmental issues. In terms of occupation, government employees (34%) and self-employed individuals (32%) form the largest groups, indicating a stable professional background. Income distribution is well spread, with the largest segment (32%) earning between 20,001 and 40,000, while the remaining respondents are fairly evenly distributed across other income levels. This reflects that green consumption is prevalent across diverse income groups.

Impact of Social Media Green Marketing on Consumer Purchase Intention: The Mediating Role of Environmental Awareness

The second part of the questionnaire contains three constructs: Social Media Green Marketing, Environmental Awareness and Consumer Purchase Intention. All constructs were analysed using Structural Equation Modelling (SEM) with the

software SmartPLS (Version 3.1.0.0). The PLS-SEM approach is well-liked by academics because it allows them to estimate complex models with multiple constructs, indicator variables and structural routes without making distributional assumptions about the data. PLS-SEM, a causal predictive approach to SEM, prioritizes prediction when estimating statistical models with structures intended to provide causal explanations. Consequently, the solutions address the apparent tension between explanation and prediction, which forms the basis for formulating management implications (30). The researchers found PLS-SEM to be the best option for this context and framed the model shown in Figure 1.

Figure 1 illustrates the proposed conceptual framework of the study. Social Media Green Marketing is positioned as the exogenous construct, Environmental Awareness functions as the mediator and Purchase Intention is the outcome construct. The model specifies direct paths from Social Media Green Marketing to Environmental Awareness and Purchase Intention, together with an indirect pathway through Environmental Awareness. These relationships correspond to the four hypotheses tested in the study.

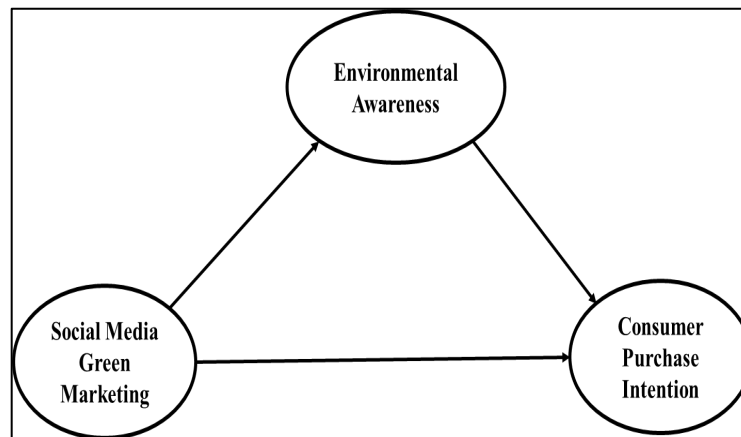


Figure 1: Proposed Model for the Study

Model Assessment

The Partial Least Squares Structural Equation Modelling (PLS-SEM) method was employed in this investigation. For exploratory research, especially when the relationship between variables is ambiguous, PLS-SEM is perfect (29, 30). PLS-SEM is perfect for capturing the intricacies of both linear and nonlinear connections. It allows researchers to examine direct, indirect and total effects and provides them with a thorough grasp of the theoretical framework.

The structural model assesses the relationships among the constructs, whereas the measurement model assesses the reliability and validity of the measurement constructs. Bootstrapping parameters were specified using the “no sign changes” option and 5,000 bootstrap samples were used to assess the stability and significance of the estimates (30).

Evaluation of Measurement Model

Construct's Reliability

Structural equation modelling requires the reliability of the measurement constructs to be established before the structural relationships are assessed (30, 31). Composite reliability values above 0.70 are generally considered acceptable. In

this study, the composite reliability values ranged from 0.938 to 0.941, while Cronbach's alpha values ranged from 0.919 to 0.923. All indicator loadings exceeded 0.70, indicating adequate measurement reliability. Table 2 presents the item loadings and construct reliability.

Convergent Validity

Convergent validity is defined as "the extent to which a measure correlates positively with alternative measures of the same construct". For a study to have convergent validity, the average variance extracted of the variables considered must be more than 0.50 (30). The Average Variance Extracted (AVE) values in this study fall between 0.753 and 0.760. The highest AVE [0.760] was obtained for the construct Purchase Intention (PI) and the lowest [0.753] for the construct Environmental Awareness.

Table 2 reports the reliability and convergent-validity results for the three study constructs. The indicator loadings are all above the recommended level, while Cronbach's alpha and composite reliability values demonstrate satisfactory internal consistency. The AVE values also exceed the recommended threshold, supporting convergent validity of the measurement model.

Table 2: Cronbach's Alpha (CA), Average Variance Extracted (AVE), Individual Factor Loadings, Composite Reliability (CR) and Average Loading (AL)

Constructs		Individual Factor Loadings	Average Loading (AL)	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Environmental Awareness	EA1	0.877	0.918	0.919	0.938	0.753
	EA2	0.880				
	EA3	0.861				
	EA4	0.870				
	EA5	0.850				
	PI1	0.866	0.921	0.923	0.941	0.760
	PI2	0.882				

Consumer	PI3	0.874				
Purchase	PI4	0.872				
Intention	PI5	0.864				
Social Media	SMGM1	0.854	0.919	0.920	0.939	0.756
Green Marketing	SMGM2	0.868				
	SMGM3	0.859				
	SMGM4	0.877				
	SMGM5	0.890				

Note: CA = Cronbach's Alpha, AVE = Average Variance Extracted, CR = Composite Reliability, AL = Average Loading, EA = Environmental Awareness, PI = Purchase Intention, SMGM = Social Media Green Marketing.

Discriminant Validity

Discriminant validity was assessed using the Fornell-Larcker criterion, whereby the square root of the AVE for each construct should exceed its highest correlation with another construct (31).

Table 3 presents the Fornell-Larcker criterion used to assess discriminant validity among the three

constructs. The diagonal values represent the square roots of the AVE values, while the off-diagonal values represent correlations among constructs. Because each diagonal value exceeds the corresponding inter-construct correlations, the discriminant-validity criterion is satisfied.

Table 3: Fornell-Larcker Criterion Table

	EA	PI	SMGM
EA	0.868		
PI	0.665	0.872	
SMGM	0.610	0.517	0.870

Note: EA = Environmental Awareness, PI = Purchase Intention, SMGM = Social Media Green Marketing, AVE = Average Variance Extracted. Diagonal values (bold) represent the square root of the Average Variance Extracted (AVE) for each construct; off-diagonal values are the correlations between constructs. Discriminant validity is established when the diagonal value in each row and column exceeds the corresponding off-diagonal (correlation) values (30).

Cross-loadings

To further evaluate discriminant validity, item-level cross-loadings were also examined. Discriminant validity is supported when each indicator loads more strongly on its intended construct than on any other construct in the model (30). As shown in Table 4, every indicator loads highest on its own construct, with the smallest gap between an indicator's own loading and its highest cross-loading being 0.235 (PI4, own loading 0.872

vs. cross-loading 0.606 on EA), confirming that discriminant validity is supported at the item level. Table 4 presents the cross-loadings of all measurement indicators across the three constructs. Each indicator loads most strongly on its intended construct compared with the other constructs. This pattern provides additional evidence that the indicators adequately distinguish among Environmental Awareness, Purchase Intention and Social Media Green Marketing.

Table 4: Cross-loadings

Item	Environmental Awareness	Purchase Intention	Social Media Green Marketing
Environmental Awareness 1	0.877	0.577	0.531
Environmental Awareness 2	0.880	0.594	0.555
Environmental Awareness 3	0.861	0.506	0.532
Environmental Awareness 4	0.870	0.626	0.504
Environmental Awareness 5	0.850	0.576	0.525
Purchase Intention 1	0.559	0.866	0.414
Purchase Intention 2	0.589	0.882	0.412
Purchase Intention 3	0.599	0.874	0.505
Purchase Intention 4	0.606	0.873	0.492
Purchase Intention 5	0.540	0.864	0.421
Social Media Green Marketing 1	0.526	0.463	0.854
Social Media Green Marketing 2	0.506	0.443	0.868
Social Media Green Marketing 3	0.541	0.405	0.860
Social Media Green Marketing 4	0.521	0.478	0.877

Social Media Green Marketing 5	0.558	0.455	0.890
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Note: EA = Environmental Awareness, PI = Purchase Intention, SMGM = Social Media Green Marketing.

Heterotrait-Monotrait Ratio (HTMT)

As an additional, more stringent test of discriminant validity, the Heterotrait-Monotrait ratio of correlations (HTMT) was computed, as shown in Table 5. HTMT values below 0.85 (or the more conservative 0.90 threshold for conceptually similar constructs) indicate that discriminant validity has been established. In this study, all HTMT values fall well below these thresholds — $EA \leftrightarrow PI = 0.720$, $SMGM \leftrightarrow EA = 0.664$ and $SMGM \leftrightarrow PI = 0.559$ — with 95% bootstrapped confidence

intervals that do not include 1 ($EA \leftrightarrow PI$: 0.656–0.777; $SMGM \leftrightarrow EA$: 0.576–0.737; $SMGM \leftrightarrow PI$: 0.459–0.645), providing robust confirmation that the three constructs are empirically distinct.

Table 5 presents the Heterotrait-Monotrait ratio values for the three constructs. The reported HTMT values are below the commonly applied threshold, indicating that the constructs demonstrate adequate discriminant validity. The results therefore provide additional support for the distinctiveness of the measurement constructs.

Table 5: Heterotrait-Monotrait Ratio (HTMT) Matrix

	Environmental Awareness	Purchase Intention	Social Media Green Marketing
Environmental Awareness	--		
Purchase Intention	0.720	--	
Social Media Green Marketing	0.664	0.559	--

Note: HTMT = Heterotrait-Monotrait Ratio, EA = Environmental Awareness, PI = Purchase Intention, SMGM = Social Media Green Marketing.

Confidence intervals for the structural path estimates further support the robustness of the measurement and structural model. The 95% bootstrapped confidence intervals for the path coefficients do not cross zero for any path ($EA \rightarrow PI$: 0.452–0.653; $SMGM \rightarrow EA$: 0.528–0.683; $SMGM \rightarrow PI$: 0.064–0.292) and the confidence interval for the indirect effect ($SMGM \rightarrow EA \rightarrow PI$: 0.267–0.418) also excludes zero, reinforcing the significance and stability of the hypothesised relationships reported in Tables 7 and 8.

Multicollinearity

Multicollinearity was assessed using the Variance Inflation Factor (VIF) before the structural model

was evaluated (30). Multicollinearity is generally considered problematic when VIF values exceed 5.0. All measurement indicators in the model had VIF values below this threshold, with the maximum VIF value being 3.051, as shown in Table 6. These results indicate that multicollinearity was not a concern in the structural model.

Table 6 presents the Variance Inflation Factor values for the measurement indicators. All reported VIF values are below the threshold of 5.0, indicating that problematic multicollinearity is not present among the indicators. The results therefore support the suitability of the measurement indicators for subsequent structural-model assessment.

Table 6: Multicollinearity (VIF Values)

Items	Variance Inflation Factor
Environmental Awareness 1	2.840
Environmental Awareness 2	2.891
Environmental Awareness 3	2.623
Environmental Awareness 4	2.710
Environmental Awareness 5	2.414
Purchase Intention 1	2.690
Purchase Intention 2	2.988
Purchase Intention 3	2.753
Purchase Intention 4	2.681
Purchase Intention 5	2.778
Social Media Green Marketing1	2.459
Social Media Green Marketing 2	2.703
Social Media Green Marketing 3	2.589
Social Media Green Marketing 4	2.796

Note: VIF = Variance Inflation Factor. VIF (Variance Inflation Factor) values below 5.0 indicate the absence of problematic multicollinearity among indicators; values below 3.3 are considered ideal (30).

Structural Path Coefficients – Direct Effects

The path coefficients that were hypothesised were estimated using the PLS-SEM algorithm via Smart PLS 3. Path coefficients range from -1 to +1, with larger absolute values indicating stronger relationships. Statistical significance was assessed using the bootstrapping procedure (30).

Table 7 reports the results of this bootstrapped analysis for the three hypothesised direct paths,

presenting the standardised path coefficient (β), t-statistic, p-value and support decision for each relationship.

Table 7 presents the bootstrapped direct effects for the three hypothesised structural relationships. The table reports the standardised path coefficient, t-statistic, p-value and hypothesis decision for each relationship. All three direct paths are statistically significant, providing empirical support for the proposed direct relationships in the model.

Table 7: Bootstrapped Critical Ratio Test with 5000 Sub-samples for the Proposed Model

Path	Hypothesis	β	t-Statistics	p-values	Results
Environmental Awareness → Purchase Intention	Ho1	0.557	10.848	0.000	Supported
Social Media Green Marketing → Environmental Awareness	Ho2	0.610	15.573	0.000	Supported
Social Media Green Marketing → Purchase Intention	Ho3	0.177	3.005	0.003	Supported

Note: β = Standardised Path Coefficient, t = t-statistic, p = p-value, Ho = Hypothesis. Previous methodological guidance states that the t-values vary from t=1.56 ($\alpha=0.10$), t=1.96 ($\alpha=0.05$) and t=2.57 ($\alpha=0.01$). β denotes the standardised path coefficient (Original Sample value) from the PLS-SEM bootstrapping procedure with 5,000 sub-samples; p-values below 0.05 are considered statistically significant.

Results

A 95% confidence level was selected in the current investigation to evaluate the hypothesis. All three routes were determined to be noteworthy in this investigation. The following are the illustrations of the Structural Equation Modelling (SEM) results:

Ho1: Environmental Awareness (EA) positively influences Purchase Intention (PI). The path between EA and PI is found to be significant ($\beta = 0.557$; $t = 10.848$ and $p < 0.000$). Hence, the hypothesis is supported.

Ho2: Social Media Green Marketing (SMGM) positively influences Environmental Awareness (EA). The path between SMGM and EA is found to be significant ($\beta = 0.610$; $t = 15.573$ and $p < 0.000$). Hence, the hypothesis is supported.

Ho3: Social Media Green Marketing (SMGM) positively influences Purchase Intention (PI). The

path between SMGM and PI is found to be significant ($\beta = 0.177$; $t = 3.005$ and $p < 0.003$). Hence, the hypothesis is supported.

Mediation Analysis

Table 8 illustrates the use of the bootstrapping method to examine the simple mediation effect. The confidence interval threshold was set at 95%.

Table 8 presents the bootstrapped mediation results for the indirect relationship between Social Media Green Marketing and Purchase Intention through Environmental Awareness. The indirect effect is positive and statistically significant, while the direct effect remains significant. These results indicate that Environmental Awareness partially mediates the relationship between Social Media Green Marketing and Purchase Intention.

Table 8: Mediation Results

Relationships	Hypothesis	β	T-Statistics	p-values	Results
Social Media Green Marketing → EA → PI	Ho4	0.340	8.894	0.000	Partial Mediation

Note: SMGM = Social Media Green Marketing, EA = Environmental Awareness, PI = Purchase Intention, β = Standardised Path Coefficient, t = t-statistic, p = p-value.

The indirect effect analysis, as shown in Table 8, indicates that the relationship between Social Media Green Marketing (SMGM) and Purchase Intention (PI) is mediated by Environmental

Awareness (EA). The indirect path (SMGM → EA → PI) is statistically significant ($\beta = 0.340$, $t = 8.894$, $p < 0.001$), supporting the mediating role of EA. Although both the direct and indirect effects are

statistically significant, the presence of a significant direct effect alongside a significant indirect effect is

indicative of partial mediation rather than full mediation.

The mediation model can be represented through the following structural Equations [1-4]:

Mediator equation: $EA = \beta_1(SMGM) + \varepsilon_1$ [1]

Outcome equation: $PI = \beta_2(SMGM) + \beta_3(EA) + \varepsilon_2$ [2]

Indirect effect: $SMGM \rightarrow EA \rightarrow PI = \beta_1 \times \beta_3 = 0.610 \times 0.557 = 0.340$ ($t = 8.894, p < 0.001$) [3]

Total effect: $\beta_{total} = \beta_2 + (\beta_1 \times \beta_3) = 0.177 + 0.340 = 0.517$ [4]

Since both β_2 (direct effect) and $\beta_1 \times \beta_3$ (indirect effect) are significant, the model reflects partial mediation.

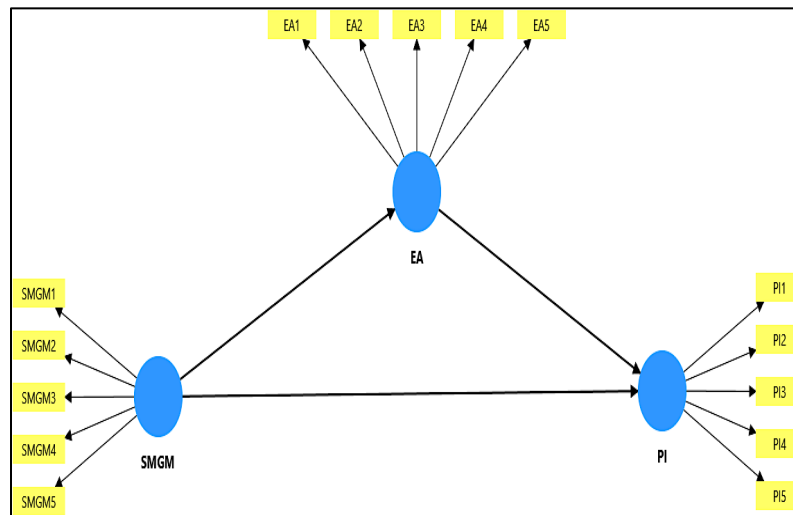


Figure 2: PLS-SEM Bootstrapping Model

Note: PLS-SEM = Partial Least Squares Structural Equation Modelling, SMGM = Social Media Green Marketing, EA = Environmental Awareness, PI = Purchase Intention.

Figure 2 presents the bootstrapped PLS-SEM structural model used to assess the significance of the hypothesised relationships. The figure displays the indicator loadings for each construct and the estimated structural paths among Social Media

Green Marketing, Environmental Awareness and Purchase Intention. The model was evaluated using 5,000 bootstrap subsamples, allowing the significance of the direct and indirect relationships to be assessed.

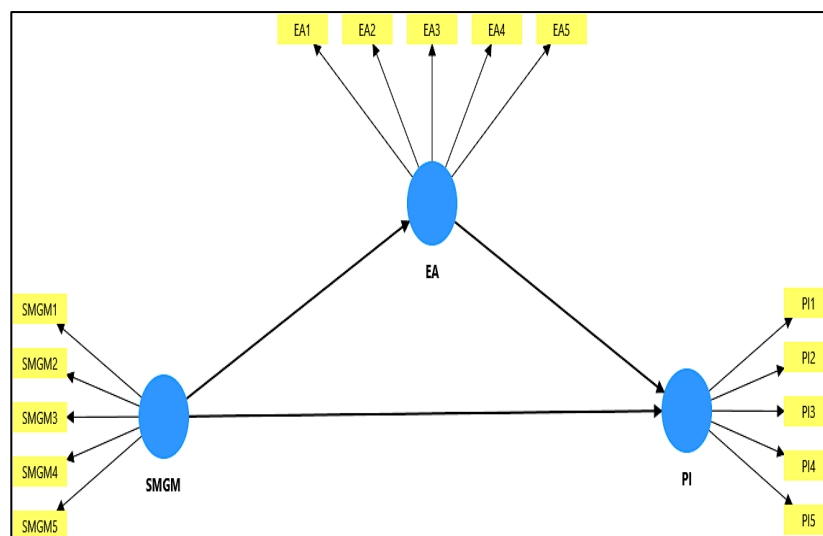


Figure 3: PLS-SEM Algorithm Model

Note: PLS-SEM = Partial Least Squares Structural Equation Modelling, SMGM = Social Media Green Marketing, EA = Environmental Awareness, PI = Purchase Intention.

Figure 3 displays the PLS-SEM algorithm model used to estimate the measurement and structural relationships. The model shows the outer loadings of the indicators on their respective latent constructs and the estimated path coefficients among the constructs. The figure provides a visual representation of the measurement quality and structural relationships examined in the study.

Discussion

The results of this study offer a comprehensive insight of Vellore's green consumer environment and the ways in which social media marketing affects consumer behaviour.

Demographic Insights

The data reveals that the "Green Consumer" in this region is typically a young to middle-aged adult (82% aged 25–45) with high educational attainment (78.6% graduates or postgraduates). This aligns with global trends suggesting that higher education correlates with better environmental literacy. Interestingly, the balanced income distribution suggests that green consumption is moving away from being a "luxury" niche and is becoming a mainstream consideration for the middle-class workforce, particularly those in stable government and self-employed sectors.

This demographic profile is broadly consistent with earlier work reporting that green consumption is disproportionately driven by younger, better-educated consumers who are more responsive to eco-labelling and social-norm-based cues (25, 26). It also departs, however, from studies conducted in fully developed markets, where green consumption is reported to be more evenly distributed across age and income groups (10). A plausible explanation is that in a semi-urban Indian market such as Vellore, exposure to digital and green marketing content remains concentrated among educated, socially active segments, so the "typical" green consumer observed here reflects platform access and digital literacy as much as underlying environmental values. This also points to a limitation of the convenience-sampling approach: the skew toward younger, educated respondents may inflate the apparent strength of the social-media-driven pathways relative to the wider population.

Structural Model and Mediation

The SEM results confirm that Social Media Green Marketing (SMGM) is a powerful catalyst for both

building awareness and driving sales. The significant path from SMGM to Environmental Awareness (Ho2) suggests that social media is not just a sales tool but an educational platform that successfully informs consumers about ecological issues. The most critical finding is the partial mediation of Environmental Awareness (Ho4). While SMGM does have a direct impact on Purchase Intention (Ho3), the strength of the indirect path through Environmental Awareness ($\beta = 0.340$, $p < 0.001$) indicates that marketing efforts are most effective when they first convert the consumer's mindset. In essence, social media campaigns do not just make people buy; they make people care and that care is what ultimately drives the purchase.

Examining the magnitude of the path coefficients adds further nuance to this picture. The paths from Social Media Green Marketing to Environmental Awareness ($\beta = 0.610$) and from Environmental Awareness to Purchase Intention ($\beta = 0.557$) are both strong by conventional PLS-SEM standards (26, 30), whereas the direct path from Social Media Green Marketing to Purchase Intention ($\beta = 0.177$) is comparatively modest, even though all three paths are statistically significant. This asymmetry reinforces the partial-mediation finding: social media green marketing's influence on purchase intention flows mainly through the awareness pathway (indirect effect $\beta = 0.340$) rather than through a direct route. This pattern is broadly consistent with prior PLS-SEM studies of green marketing, which similarly report stronger awareness-mediated effects than direct marketing-to-intention effects (26, 30), reinforcing the conclusion that environmental awareness — rather than exposure to green marketing content alone — is the primary engine of green purchase intention in this sample.

The findings of this study are broadly consistent with prior literature on green marketing and environmental awareness. The strong positive path from Environmental Awareness to Purchase Intention (Ho1) supports earlier work showing that environmentally conscious consumers respond more favourably to green marketing messages and are more inclined to complete a purchase (10, 27). Similarly, the significant influence of Social Media Green Marketing on Environmental Awareness (Ho2) reinforces prior findings that social media functions as an effective educational channel, raising ecological knowledge

alongside promotional messaging (13, 16, 17), rather than operating purely as a sales tool. The significant direct effect of Social Media Green Marketing on Purchase Intention (Ho3) is likewise consistent with studies reporting that social media platforms directly shape green purchasing decisions through trust, transparency and brand engagement (14, 18, 19).

One notable point of divergence concerns the nature of the mediation. While several earlier studies working within TPB-based or purely attitudinal frameworks report near-full mediation by environmental awareness (19, 31), the present study finds only partial mediation (Ho4): both the direct (SMGM → PI) and indirect (SMGM → EA → PI) paths remain significant. A plausible contextual explanation is that Vellore represents a semi-urban, emerging-market setting rather than the Tier-1 metropolitan or Western contexts common in earlier research (10). In such settings, consumers may still respond to social media green marketing cues — price incentives, visual appeal, peer endorsement — even before fully internalising the underlying environmental message, so purchase intention forms through both a direct, marketing-driven route and an indirect, awareness-driven route simultaneously. This pattern is consistent with the geographic and technological gap identified earlier in the literature and suggests that environmental awareness, while an important psychological bridge, does not yet fully displace direct marketing influence on purchase decisions in less-studied regional markets.

Conclusion

According to the study's findings, social media green marketing has a crucial role in influencing customer behaviour. The demographic results point to a target group of highly educated Gen X and Millennial professionals, suggesting a significant area of attention for marketers.

The results of the PLS-SEM demonstrate that although social media green marketing significantly influences purchase intention directly, its primary effectiveness stems from increasing environmental consciousness. The mediation analysis shows that a key factor in connecting marketing initiatives to consumer purchase intention is environmental awareness. This suggests that consumers' cognitive and affective understanding of environmental issues serves as

the underlying mechanism that transforms exposure to digital green marketing into actual purchase behavior. Therefore, the findings imply that without cultivating environmental awareness, the impact of social media green marketing may remain limited and less effective.

This conclusion should, however, be interpreted in light of the study's limitations. The findings are based on a convenience sample of 300 respondents from a single semi-urban district (Vellore) and a cross-sectional design, which together limit generalisability and preclude causal claims. Future research employing probability-based sampling across broader regions, longitudinal designs and measures of actual purchase behaviour would help confirm and extend these results; a fuller discussion of these limitations and corresponding future research directions is provided in the Limitations and Future Scope section below.

Practical Implications

Educational Content Strategy: Marketers should shift from purely "promotional" content to "educational" content. Since awareness is the primary mediator, campaigns should focus on the "why" behind the product—explaining the environmental impact of traditional products versus green alternatives—rather than just the features of the product itself.

Targeting the "Educated Middle-Class": The demographic data suggests that the most receptive audience is the educated workforce. Advertising budgets should be optimised for social media platforms preferred by professionals and graduates (such as LinkedIn or Instagram) with messaging tailored to the 25–45 age bracket.

Leveraging Government and Professional Networks: Given the high percentage of government employees and self-employed professionals in the sample, B2B2C (Business-to-Business-to-Consumer) strategies or workplace-based green initiatives could be highly effective. Providing green incentives or certifications that appeal to professional status may drive higher engagement.

Simplifying Green Information: While the audience is educated, brands should use transparent labelling and concise social media content to maintain high environmental awareness without overcomplicating the message.

Multi-Income Pricing Models: Since green interest spans all income brackets in the study,

companies should consider a tiered pricing strategy. Offering "entry-level" green products alongside "premium" eco-options will ensure that environmental awareness translates into actual purchases across the entire socio-economic spectrum.

Limitations and Future Scope

This study has several limitations that should be acknowledged. First, data were collected using convenience sampling from a single semi-urban district (Vellore), which limits the generalisability of the findings to other regional, urban, or rural contexts. This sampling approach also introduces a risk of selection bias: because participation depended on respondents' accessibility and willingness to engage, the sample likely over-represents individuals who are already digitally active and comfortable completing an online or in-person questionnaire, while under-representing consumers with limited social media exposure or digital literacy — precisely the population least likely to be reached by social media green marketing in the first place. The sample was also not weighted or stratified to match the underlying population's age, income, or education distribution, so the reported relationships should be interpreted as indicative of this specific respondent group rather than as population-representative estimates for the Vellore district as a whole. Second, the cross-sectional design captures consumer perceptions at a single point in time and relies on self-reported measures, which may be subject to social-desirability bias and cannot establish causal or long-term relationships between social media exposure, environmental awareness and purchase intention. Third, the model measures purchase intention rather than actual purchase behaviour, so the well-documented intention-behaviour gap in green consumption was not directly examined. Finally, the study treats social media green marketing as a single construct and does not differentiate between platforms (e.g., Instagram, YouTube, LinkedIn) or content formats, which may exert different effects on consumers.

Future research could address these limitations by adopting probability-based sampling across multiple regions or states to improve generalisability and by using longitudinal designs that track actual purchase behaviour rather than intention alone. Comparative studies across platforms, urban-rural contexts, or countries would

help clarify how the SMGM-EA-PI relationships identified here vary by context. Future studies could also incorporate additional mediating or moderating variables such as green trust, perceived value and consumer skepticism toward greenwashing, to build a more complete picture of how social media shapes sustainable consumption decisions.

Abbreviations

AVE: Average Variance Extracted, CR: Composite Reliability, EA: Environmental Awareness, HTMT: Heterotrait-Monotrait Ratio, PI: Purchase Intention, PLS-SEM: Partial Least Squares Structural Equation Modelling, SEM: Structural Equation Modelling, SMGM: Social Media Green Marketing, SRMR: Standardised Root Mean Square Residual, VIF: Variance Inflation Factor.

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Author Contributions

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Conflict of Interest

The authors declare no conflict of interest.

Data Availability

The data can be made available from the corresponding author, on a reasonable request.

Declaration of Artificial Intelligence (AI) Assistance

The authors acknowledge the use of generative AI to assist in the paraphrasing of certain parts of the manuscript. All content generated through AI was critically reviewed, edited and verified by the authors to ensure accuracy, originality and compliance with academic standards. The authors take full responsibility for the integrity and validity of the manuscript. Generative AI was not used to create Figures 1–3; the figures were generated by the authors using SmartPLS software output and standard diagramming tools.

Ethics Approval

The study protocol was approved by the Institutional Ethical Committee for Human Studies, VIT University (Application No. VIT/ECH/2024/15 II:CH/20 April 2024/17; approved on 15 May 2024). The study adhered to established ethical guidelines for human participant research. Prior to data collection, participants were informed about the study and provided informed consent. Participation was voluntary, with the right to withdraw at any time. No personally identifiable information was collected and all responses were kept anonymous and confidential.

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