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AI-Enabled Green Marketing Practices, Green Purchase Intention and Sustainable Consumer Behaviour

A Study on the Impact of Green Marketing Practices and the Green Marketing Mix on Consumers

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ABSTRACT

Purpose. Firms increasingly use artificial intelligence (AI) — personalised recommendations, chatbots, predictive analytics and smart supply chains — to plan, communicate and deliver environmentally responsible offerings. This study examines how AI-enabled Green Marketing Practices (GMP) and the Green Marketing Mix (GMM) influence consumers' Green Purchase Intention and Sustainable Consumer Behaviour (SCB).

Design/methodology. A quantitative, cross-sectional survey was conducted using a structured 30-item questionnaire on a five-point Likert scale (N = 200). Data were analysed in Microsoft Excel using descriptive statistics, Cronbach's alpha, Pearson correlation, chi-square tests of independence, one-way ANOVA and simple and multiple linear regression. Seven hypotheses (H1–H7) were tested at the 5% significance level.

Findings (illustrative data). All scales showed acceptable to excellent reliability (α = .766 to .929). GMP had a significant positive effect on SCB (β = .490, R^2 = .240, $p < .001$) and on green purchase intention (β = .545, R^2 = .297, $p < .001$); the overall GMM also significantly predicted SCB (β = .382, R^2 = .146). Among the four elements of the mix, only green promotion was a significant unique predictor of SCB (β = .207, p = .007), while green product, price and place were not significant at the 5% level. Chi-square and ANOVA tests found no significant association between demographic or exposure groups and the level of purchase intention or SCB.

Originality/implications. The study integrates AI-enabled green marketing practices, the 4Ps green marketing mix, purchase intention and sustainable consumer behaviour in a single, testable framework, and offers a reproducible Excel-based analytical workflow. Managers are advised to prioritise credible, personalised green communication supported by transparent operations and packaging.

Keywords: AI-enabled marketing; green marketing practices; green marketing mix; green purchase intention; sustainable consumer behaviour; regression analysis

1. Introduction

1.1 Background of the study

Climate change, resource depletion and plastic pollution have moved environmental responsibility from the margins to the mainstream of consumer decision-making. Consumers are increasingly aware of the ecological footprint of what they buy, and organisations across sectors have responded by adopting green marketing — the planning, promotion and delivery of products and services that satisfy customer needs with reduced harm to the natural environment (Polonsky, 1994; Peattie & Crane, 2005).

At the same time, marketing itself is being reshaped by artificial intelligence. Machine-learning models predict demand and reduce waste, recommendation engines personalise offers, conversational agents answer product-sustainability queries in real time, and digital tools such as QR codes make product origin and recycling instructions instantly accessible (Davenport et al., 2020; Kumar et al., 2019; Huang & Rust, 2021). AI therefore offers marketers new ways to design, communicate and deliver green value — but also new risks, since exaggerated or unverifiable environmental claims (greenwashing) can quickly erode consumer trust (Delmas & Burbano, 2011).

Whether these AI-enabled green marketing efforts actually translate into stronger green purchase intention and, more importantly, into sustained sustainable consumer behaviour remains an open empirical question. This paper addresses that question using a consumer survey and a transparent, spreadsheet-based statistical analysis.

1.2 Problem statement

Organisations invest heavily in green products, communication and distribution, yet consumers often express positive environmental attitudes without corresponding purchase and consumption behaviour — the well-documented attitude–behaviour gap (Joshi & Rahman, 2015; White et al., 2019). It is unclear which organisational green marketing practices, and which elements of the green marketing mix, most strongly influence consumers' intentions and everyday sustainable behaviour, particularly when marketing is enabled by AI technologies.

1.3 Significance of the study

- **Theoretical:** integrates green marketing practices, the green 4Ps, purchase intention and sustainable behaviour in one framework grounded in the Theory of Planned Behaviour.
- **Managerial:** identifies which green marketing levers deliver the greatest behavioural return, helping firms allocate budgets and avoid ineffective or misleading claims.
- **Policy and society:** provides evidence for regulators and sustainability advocates on how marketing can be aligned with responsible consumption.

1.4 Structure of the paper

Section 2 reviews the literature and develops the hypotheses; Section 3 states the objectives; Section 4 describes the methodology; Section 5 presents the data analysis and results; Section 6 discusses the findings; Section 7 outlines implications; Section 8 notes limitations and future research; and Section 9 concludes.

2. Review of Literature and Hypothesis Development

2.1 Green marketing and green marketing practices

Green marketing has evolved from a narrow focus on ecologically harmless products to a strategic orientation that spans the whole value chain. Polonsky (1994) described it as activities designed to generate and facilitate exchanges that satisfy human needs with minimal detrimental impact on the natural environment. Peattie and Crane (2005) critically reviewed the history of green marketing and cautioned that superficial approaches, such as tactics that emphasise green image without substance, fail to deliver lasting consumer engagement. A systematic review by Dangelico and Vocalelli (2017) further organised the field into definitions, strategic steps and tools, underlining that credible green marketing combines product, process and communication decisions.

Drawing on this literature and the study framework, five dimensions of Green Marketing Practices (GMP) are considered: (i) environmentally friendly operations; (ii) green communication and promotion; (iii) sustainable packaging; (iv) green product innovation; and (v) stakeholder engagement and collaboration. Together they capture what organisations actually do — internally and externally — to demonstrate environmental responsibility (Objective 1).

2.2 Artificial intelligence in marketing

Davenport et al. (2020) argue that AI changes both marketing strategy and customer behaviour through capabilities such as prediction, personalisation and automation. Huang and Rust (2021) propose a strategic framework in which mechanical, thinking and feeling AI support marketing research, strategy and action, while Kumar et al. (2019) show how AI enables personalised customer engagement at scale. In the green context, AI can optimise energy use and logistics, provide personalised eco-friendly recommendations, power chatbots that explain environmental credentials, and enable traceability of packaging and materials. In this study, GMP items are therefore worded to reflect AI-enabled tools and communication (see Appendix A).

2.3 Green marketing mix

The green marketing mix adapts the classical 4Ps (McCarthy, 1960) to environmental objectives: **green product** (eco-friendly quality, labelling and certification), **green price** (fair pricing of environmental value), **green promotion** (credible communication of environmental benefits) and **green place** (accessible and environmentally responsible distribution). Research on green consumers shows that perceived value, perceived risk and trust shape green purchase intentions (Chen & Chang, 2012), and that price, product attributes and information credibility are recurrent determinants of green purchase behaviour (Joshi & Rahman, 2015).

2.4 Green purchase intention and sustainable consumer behaviour

The Theory of Planned Behaviour holds that behavioural intention — shaped by attitudes, subjective norms and perceived behavioural control — is the immediate antecedent of behaviour (Ajzen, 1991). Green purchase intention is therefore a proximal indicator of green buying. Sustainable Consumer

Behaviour (SCB), however, is broader: it encompasses preference for green products, responsible usage and disposal, advocacy and word of mouth, and a long-term sustainable lifestyle. Changing such behaviour requires more than information; frameworks such as SHIFT emphasise social influence, habit formation, self-concept, feelings and tangibility (White et al., 2019), all of which can be supported by well-designed marketing.

2.5 Hypothesis development

GMP and SCB. When firms operate responsibly, package sustainably, innovate green products and engage stakeholders, they provide consumers with credible, tangible cues and opportunities to act sustainably. AI-enabled personalisation and information further reduce the effort of behaving sustainably. Hence:

H1: Green Marketing Practices have a significant positive impact on Sustainable Consumer Behaviour.

GMP and purchase intention. Visible and credible green practices raise perceived green value and trust, which are antecedents of purchase intention (Chen & Chang, 2012). Hence:

H2: Green Marketing Practices have a significant positive impact on consumers' Green Purchase Intention.

GMM and SCB. An integrated green mix that makes green products good, fairly priced, credibly promoted and easy to obtain removes the main barriers to sustainable behaviour. Hence:

H3: Green Marketing Mix has a significant positive impact on Sustainable Consumer Behaviour.

Because each element of the mix works through a different mechanism — quality and labelling (product), affordability and value (price), information and persuasion (promotion), and availability and convenience (place) — the elements are also tested individually:

H4: Green Product has a significant positive impact on Sustainable Consumer Behaviour.

H5: Green Price has a significant positive impact on Sustainable Consumer Behaviour.

H6: Green Promotion has a significant positive impact on Sustainable Consumer Behaviour.

H7: Green Place/Distribution has a significant positive impact on Sustainable Consumer Behaviour.

2.6 Research gap

Existing studies typically examine either green marketing tools or green purchase intention, and seldom test the practices, the marketing mix, intention and broader sustainable behaviour together. Moreover, the role of AI-enabled marketing within this system is under-explored. This study addresses the gap by testing an integrated framework (Figure 1).

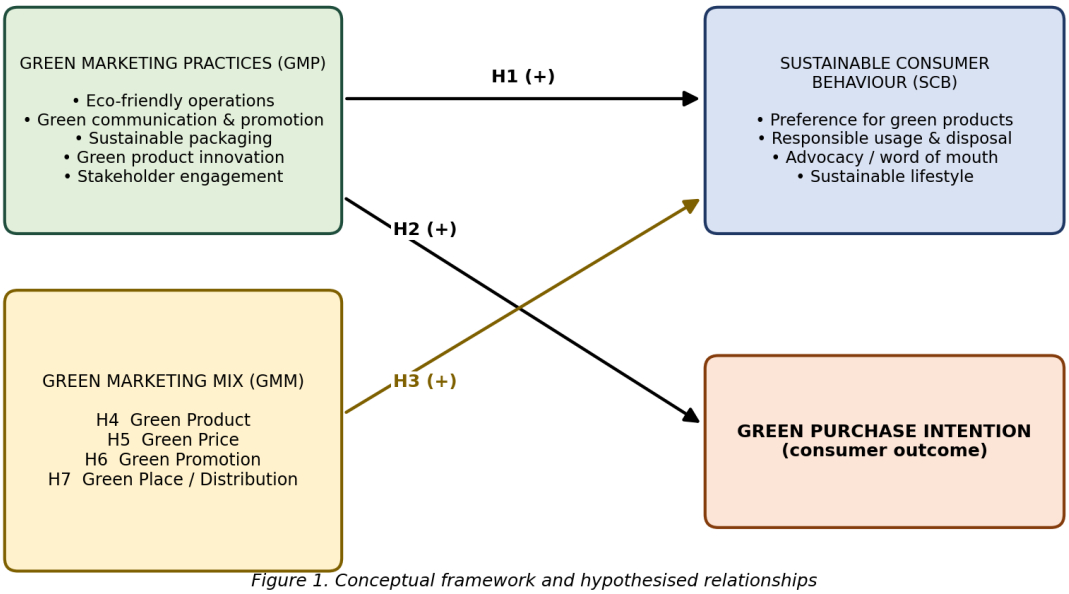


Figure 1. Conceptual framework and hypothesised relationships

Table 1. Hypotheses of the study (null hypotheses stated as H0)

Code	Alternative hypothesis (H)	Null hypothesis (H0)
H1	GMP has a significant positive impact on SCB.	GMP has no significant impact on SCB.
H2	GMP has a significant positive impact on Green Purchase Intention.	GMP has no significant impact on Green Purchase Intention.
H3	GMM has a significant positive impact on SCB.	GMM has no significant impact on SCB.
H4	Green Product has a significant positive impact on SCB.	Green Product has no significant impact on SCB.
H5	Green Price has a significant positive impact on SCB.	Green Price has no significant impact on SCB.
H6	Green Promotion has a significant positive impact on SCB.	Green Promotion has no significant impact on SCB.
H7	Green Place/Distribution has a significant positive impact on SCB.	Green Place/Distribution has no significant impact on SCB.

Note: H0 statements for H4–H7 follow the same form as $H0_1$–$H0_3$ in the research framework.

3. Objectives of the Study

1. To identify the various Green Marketing Practices adopted by organisations.
2. To study the impact of Green Marketing Practices (GMP) on Sustainable Consumer Behaviour (SCB).
3. To analyse the impact of Green Marketing Practices on consumers' green purchase intention.
4. To examine the impact of the Green Marketing Mix (GMM) on Sustainable Consumer Behaviour (SCB).

4. Research Methodology

4.1 Research design

The study follows a quantitative, descriptive-cum-explanatory and cross-sectional research design. A structured questionnaire was used to collect primary data, and hypotheses were tested using inferential statistics.

4.2 Population, sample and sampling technique

The target population comprises adult consumers (18 years and above) who have purchased or seriously considered eco-friendly products in the past twelve months and who encounter brands' digital and AI-enabled marketing (e.g., personalised recommendations, chatbots, targeted social-media messages). A non-probability convenience–purposive sampling approach was used, with the questionnaire circulated online and personally within [insert study area/city]. The final sample comprised **N = 200** usable responses. This exceeds the minimum of 50 + 8m (= 82 for m = 4 predictors) suggested for testing multiple regression (Green, 1991) and offers more than 40 respondents per predictor in the largest model.

4.3 Research instrument and measurement

The questionnaire had two sections. Section A captured respondent profile (gender, age group, education, annual household income and exposure to AI-enabled green marketing). Section B contained 30 statements measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), developed from the study framework and the literature reviewed. The full item list is given in Appendix A.

Table 2. Constructs, dimensions and number of items

Construct	Dimensions covered	Items	Role
Green Marketing Practices (GMP)	Operations; communication & promotion; sustainable packaging; product innovation; stakeholder engagement (2 items each)	10	Independent

Construct	Dimensions covered	Items	Role
Green Marketing Mix (GMM)	Green product; green price; green promotion; green place (2 items each)	8	Independent / supporting
Sustainable Consumer Behaviour (SCB)	Preference for green products; responsible usage & disposal; advocacy & word of mouth; long-term sustainable lifestyle (2 items each)	8	Dependent
Green Purchase Intention (GPI)	Intention to buy, willingness to pay, consideration of environmental impact, intention to switch	4	Consumer outcome

Note: Purchase intention is measured separately from SCB so that the two outcomes can be distinguished and to avoid item overlap.

4.4 Data collection and ethical considerations

Participation was voluntary and anonymous; respondents were informed of the academic purpose of the study and no personally identifying data were collected. Responses were coded in Microsoft Excel and screened for missing or out-of-range values.

4.5 Variables and their computation

Composite scores for GMP, each element of the mix (GP, PR, PM, PL), GMM, SCB and GPI were computed as the mean of the relevant items (range 1–5). For the chi-square analysis, SCB and GPI scores were classified into three levels: Low (< 3.25), Moderate (3.25 to < 4.00) and High (≥ 4.00). These cut-offs are analyst-defined and can be changed in the workbook.

4.6 Statistical tools and techniques

All analyses were carried out in Microsoft Excel using built-in functions, so that every result is traceable to a formula and updates automatically when data change. The Analysis ToolPak is not required.

Table 3. Statistical techniques, purpose and Excel functions

Technique	Purpose	Excel functions
Descriptive statistics	Profile of respondents; mean, SD, skewness, kurtosis of constructs	COUNTIF, AVERAGE, STDEV, SKEW, KURT
Cronbach's alpha	Internal consistency of scales ($\alpha \geq 0.70$ acceptable; Nunnally, 1978)	VAR, SUM (formula)
Pearson correlation	Strength and direction of pairwise relationships	CORREL, TDIST
Chi-square test	Association between two categorical variables	COUNTIFS, CHIDIST, CHITEST
One-way ANOVA	Difference in mean scores across three or more groups	AVERAGEIF, FDIST, FINV, TDIST
Linear regression	Impact of independent variables on SCB and GPI (H1–H7)	LINEST, INDEX, TDIST, MINVERSE

4.7 Analytical models

Hypotheses were tested through four OLS regression models:

Model 1: $SCB = \beta_0 + \beta_1 \cdot GMP + \varepsilon$ *(H1)*

Model 2: $GPI = \beta_0 + \beta_1 \cdot GMP + \varepsilon$ *(H2)*

Model 3: $SCB = \beta_0 + \beta_1 \cdot GMM + \varepsilon$ *(H3)*

Model 4: $SCB = \beta_0 + \beta_1 \cdot GP + \beta_2 \cdot PR + \beta_3 \cdot PM + \beta_4 \cdot PL + \varepsilon$ *(H4–H7)*

Cronbach's alpha was computed as $\alpha = [k/(k-1)] \times [1 - \Sigma\sigma^2_i / \sigma^2_t]$, where k is the number of items, σ^2_i the item variances and σ^2_t the variance of the total score. The chi-square statistic is $\chi^2 = \Sigma\ (O - E)^2 / E$ with $df = (r - 1)(c - 1)$, and its strength is expressed by Cramér's V. The ANOVA F-ratio is

MS(between)/MS(within), with η^2 as effect size. A hypothesis is supported when the relevant coefficient is positive and $p < 0.05$. Multicollinearity in Model 4 was checked using the variance inflation factor (VIF < 5 acceptable).

5. Data Analysis and Results

NOTE — All figures in this section come from the simulated illustrative dataset described in the Draft Note and must be replaced with your real data.

5.1 Profile of respondents

Table 4 presents the demographic profile of the 200 respondents. Females formed 53.0% of the sample. The majority were aged 18–35 years (66.0%) and held a graduate or higher qualification (88.0%). Most respondents (83.0%) reported meeting AI-enabled green marketing at least sometimes.

Table 4. Demographic profile of respondents (N = 200)

Variable	Category	Frequency	Percent
Gender	Male	94	47.0%
	Female	106	53.0%
Age group	18–25	61	30.5%
	26–35	71	35.5%
	36–45	36	18.0%
	46 and above	32	16.0%
Education	Higher secondary	24	12.0%
	Graduate	84	42.0%
	Postgraduate	75	37.5%
	Doctorate / Professional	17	8.5%
Annual household income (INR)	Below 3 lakh	33	16.5%
	3–6 lakh	58	29.0%
	6–10 lakh	67	33.5%
	Above 10 lakh	42	21.0%
Exposure to AI-enabled green marketing	Rarely	34	17.0%
	Sometimes	80	40.0%
	Often	86	43.0%

5.2 Reliability analysis

Cronbach's alpha values (Table 5) exceed the 0.70 threshold for all four scales, indicating satisfactory internal consistency: GMP (.929) and SCB (.904) were excellent, GPI (.819) good and GMM (.766) acceptable. The relatively lower alpha for GMM reflects that it combines four conceptually distinct marketing-mix elements, each measured with two items.

Table 5. Reliability statistics

Scale	No. of items	Cronbach's α	Interpretation
Green Marketing Practices (GMP)	10	.929	Excellent
Green Marketing Mix (GMM)	8	.766	Acceptable
Sustainable Consumer Behaviour (SCB)	8	.904	Excellent
Green Purchase Intention (GPI)	4	.819	Good

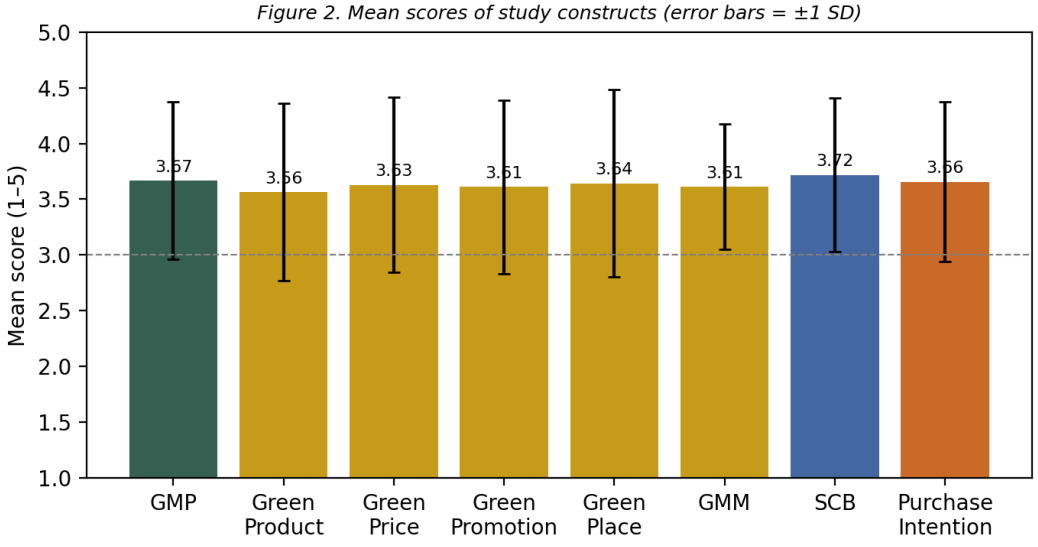
5.3 Descriptive statistics of study variables

As Table 6 shows, mean scores for all constructs lie between 3.56 and 3.72 on the five-point scale, i.e., above the neutral mid-point of 3, indicating generally favourable perceptions of green marketing and sustainable behaviour. SCB had the highest mean (3.72), and green product the lowest (3.56). Skewness and kurtosis values are all within ±1, suggesting no serious departure from normality for regression and ANOVA.

Table 6. Descriptive statistics (N = 200)

Variable	Mean	SD	Min	Max	Skewness	Kurtosis
Green Marketing Practices	3.67	0.71	1.90	5.00	-0.36	-0.51
Green Product	3.56	0.80	1.50	5.00	-0.27	-0.44
Green Price	3.63	0.78	2.00	5.00	-0.10	-0.55
Green Promotion	3.61	0.78	1.00	5.00	-0.20	-0.34
Green Place/Distribution	3.64	0.84	2.00	5.00	-0.04	-0.96
Green Marketing Mix (overall)	3.61	0.56	2.25	4.88	-0.16	-0.62
Sustainable Consumer Behaviour	3.72	0.69	2.00	5.00	-0.27	-0.42
Green Purchase Intention	3.66	0.72	1.75	5.00	-0.23	-0.40

Figure 2. Mean scores of study constructs (error bars = ±1 SD)



Green marketing practices perceived (Objective 1)

Table 7 summarises respondents' perceptions of the five GMP dimensions and the four SCB dimensions. Perceptions were similarly favourable across dimensions; stakeholder engagement and collaboration recorded the highest GMP mean (3.70), while sustainable packaging and environmentally friendly operations recorded slightly lower means (3.65 and 3.66). The spread between the highest and lowest dimension is very small, so no single practice clearly dominates in this sample.

Table 7. Mean scores of GMP and SCB dimensions (2 items each)

Construct	Dimension	Mean
GMP	Environmentally friendly operations	3.66
GMP	Green communication and promotion	3.67
GMP	Sustainable packaging	3.65
GMP	Green product innovation	3.66
GMP	Stakeholder engagement and collaboration	3.70
SCB	Preference for green products	3.70
SCB	Responsible usage and disposal	3.72
SCB	Advocacy and word of mouth	3.72
SCB	Long-term sustainable lifestyle	3.73

5.4 Correlation analysis

Table 8 shows that all study variables are positively and significantly correlated ($p < .01$). GMP correlated moderately with SCB ($r = .490$) and with green purchase intention ($r = .545$); GMM correlated with SCB ($r = .382$) and GPI ($r = .451$). Among the mix elements, green promotion ($r = .323$) and green product ($r = .310$) had the strongest associations with SCB, whereas green price was the weakest ($r = .188$). Purchase intention and SCB were moderately related ($r = .354$), supporting their treatment as related but distinct outcomes. The high correlations between GMM and its components ($r = .774$ to $.656$) are expected because the components form the composite.

Table 8. Pearson correlation matrix

	GMP	GMM	GP	PR	PM	PL	GPI	SCB
GMP	1	.454	.347	.280	.362	.288	.545	.490
GMM	.454	1	.774	.656	.720	.659	.451	.382
GP	.347	.774	1	.333	.459	.383	.295	.310
PR	.280	.656	.333	1	.341	.190	.300	.188
PM	.362	.720	.459	.341	1	.241	.320	.323
PL	.288	.659	.383	.190	.241	1	.350	.252
GPI	.545	.451	.295	.300	.320	.350	1	.354
SCB	.490	.382	.310	.188	.323	.252	.354	1

Note: N = 200. All correlations significant at $p < .01$ (two-tailed). GP = Green Product, PR = Green Price, PM = Green Promotion, PL = Green Place, GPI = Green Purchase Intention.

5.5 Chi-square tests of independence

Chi-square tests examined whether respondents' demographic characteristics and exposure to AI-enabled green marketing are associated with the level (Low/Moderate/High) of green purchase intention and SCB. Expected-frequency assumptions were met in all tests (minimum expected count ≥ 5).

Table 9. Gender × Green Purchase Intention level (observed counts)

	Low	**Moderate**	**High**	**Total**
Male	26	33	35	94
Female	22	38	46	106

$\chi^2(2) = 1.465$, $p = .481$, Cramér's V = 0.086; minimum expected count = 22.56. No significant association (fail to reject H0).

Table 10. Age group × SCB level (observed counts)

	Low	**Moderate**	**High**	**Total**
18-25	15	27	19	61
26-35	15	28	28	71
36-45	7	14	15	36
46 and above	4	15	13	32

$\chi^2(6) = 2.957$, $p = .814$, Cramér's V = 0.086; minimum expected count = 6.56. No significant association (fail to reject H0).

Table 11. Exposure to AI-enabled green marketing × Green Purchase Intention level (observed counts)

	Low	**Moderate**	**High**	**Total**
Rarely	7	16	11	34
Sometimes	25	27	28	80
Often	16	28	42	86

$\chi^2(4) = 7.149$, $p = .128$, Cramér's V = 0.134; minimum expected count = 8.16. No significant association (fail to reject H0).

None of the three tests was significant at the 5% level. Gender was unrelated to purchase-intention level ($\chi^2(2) = 1.46$, $p = .481$), and age group was unrelated to the level of SCB ($\chi^2(6) = 2.96$, $p = .814$). The association between AI-exposure and purchase-intention level was the strongest of the three, though still not significant ($\chi^2(4) = 7.15$, $p = .128$, $V = 0.13$, a small effect). Green purchase intention and SCB therefore appear to be spread similarly across these respondent groups.

5.6 One-way ANOVA

One-way ANOVA compared mean composite scores across groups. Bonferroni-adjusted post-hoc comparisons (available in the workbook) were used to follow up each test.

Table 12. SCB by age group

Group	**N**	**Mean**	**SD**
18-25	61	3.625	0.663
26-35	71	3.732	0.710
36-45	36	3.771	0.756
46 and above	32	3.809	0.627

F(3, 196) = 0.630, p = .596, η² = 0.010. No significant difference at the 5% level.

Table 13. Green Purchase Intention by exposure to AI-enabled green marketing

Group	N	Mean	SD
Rarely	34	3.515	0.754
Sometimes	80	3.572	0.713
Often	86	3.791	0.691

F(2, 197) = 2.777, p = .065, η² = 0.027. No significant difference at the 5% level.

Table 14. SCB by annual household income (INR)

Group	N	Mean	SD
Below 3 lakh	33	3.515	0.798
3-6 lakh	58	3.841	0.695
6-10 lakh	67	3.647	0.657
Above 10 lakh	42	3.824	0.611

F(3, 196) = 2.164, p = .094, η² = 0.032. No significant difference at the 5% level.

SCB did not differ significantly by age group ($F(3, 196) = 0.63$, $p = .596$, $\eta^2 = 0.010$), although the group means rose gradually with age from 3.63 (18–25) to 3.81 (46 and above). Purchase intention increased with exposure to AI-enabled green marketing (Rarely 3.51; Sometimes 3.57; Often 3.79), and the overall test approached but did not reach significance ($p = .065$); no post-hoc pair was significant after Bonferroni adjustment. SCB by income band was likewise not significant ($p = .094$, $\eta^2 = 0.032$). All three effect sizes are small ($\eta^2 < .06$), so H0 is retained for these group comparisons.

5.7 Regression analysis and hypothesis testing

Model 1 — GMP → SCB (H1)

GMP explained 24.0% of the variance in SCB ($R^2 = .240$, adjusted $R^2 = .236$; $F(1, 198) = 62.64$, $p < .001$). The unstandardised coefficient was $B = 0.479$ ($SE = 0.061$, $t = 7.91$, $p < .001$; 95% CI [0.360, 0.599]), i.e., a one-point increase in GMP is associated with a 0.48-point increase in SCB. The standardised effect ($\beta = .490$) is medium-to-large (Cohen's $f^2 = 0.316$). **H1 is supported.**

Model 2 — GMP → Green Purchase Intention (H2)

GMP explained 29.7% of the variance in green purchase intention ($R^2 = .297$, adjusted $R^2 = .294$; $F(1, 198) = 83.70$, $p < .001$), with $B = 0.554$ ($SE = 0.061$, $t = 9.15$, $p < .001$; $\beta = .545$; $f^2 = 0.423$). GMP is thus a stronger predictor of purchase intention than of SCB. **H2 is supported.**

Model 3 — GMM → SCB (H3)

The overall green marketing mix explained 14.6% of the variance in SCB ($R^2 = .146$; $F(1, 198) = 33.79$, $p < .001$); $B = 0.470$ ($SE = 0.081$, $t = 5.81$, $p < .001$; $\beta = .382$; $f^2 = 0.171$). **H3 is supported.**

Table 15. Simple regression results (Models 1–3)

H	Path	B	SE	β	t	p	R^2	F	Result
H1	GMP → SCB	0.479	0.061	.490	7.91	< .001	.240	62.64	Supported
H2	GMP → GPI	0.554	0.061	.545	9.15	< .001	.297	83.70	Supported
H3	GMM → SCB	0.470	0.081	.382	5.81	< .001	.146	33.79	Supported

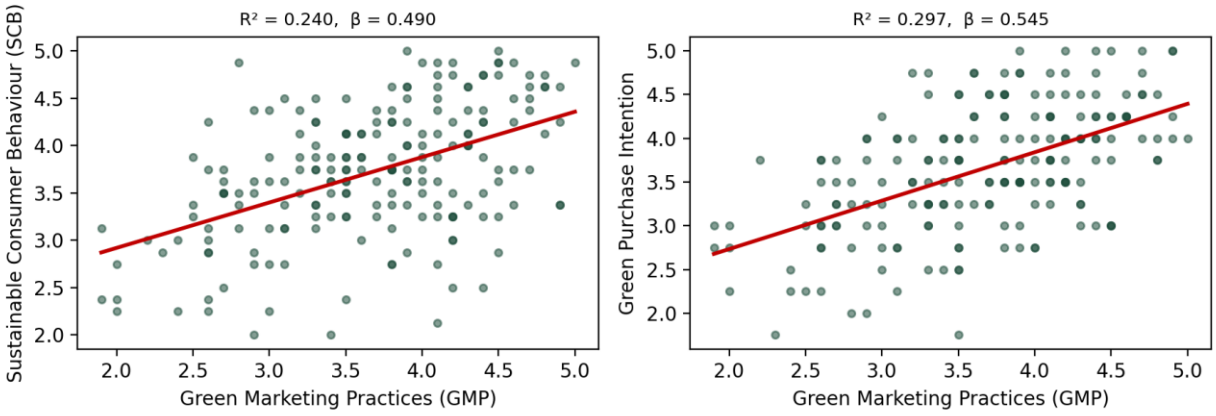


Figure 3. Regression of SCB and Green Purchase Intention on GMP

Model 4 — Green marketing mix elements → SCB (H4–H7)

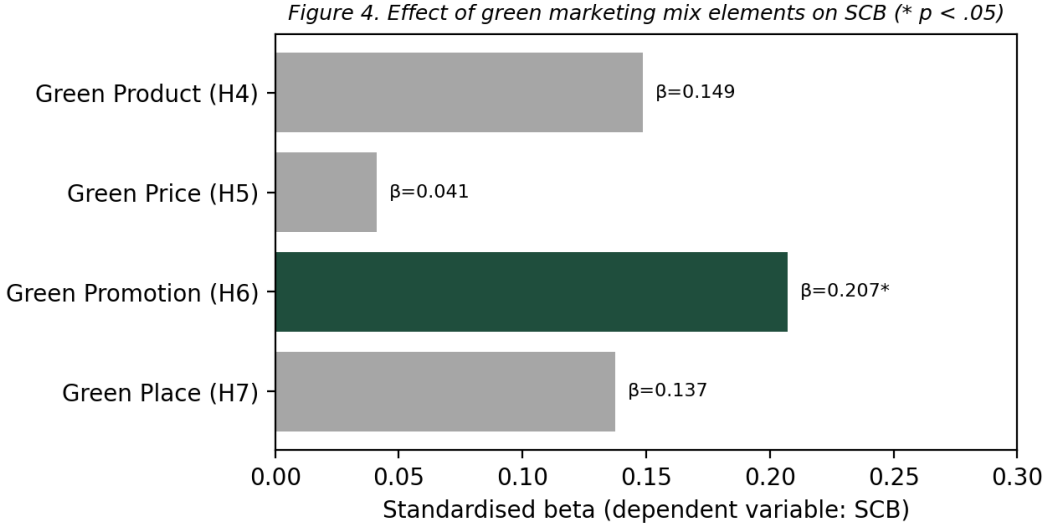
When the four mix elements were entered together, the model was significant ($R^2 = .155$, adjusted $R^2 = .138$; $F(4, 195) = 8.97$, $p < .001$; $f^2 = 0.184$). VIF values ranged from 1.18 to 1.46, well below 5, so multicollinearity is not a concern. Green promotion was the only significant unique predictor (B = 0.183, β = .207, t = 2.72, p = .007). Green product (p = .063) and green place (p = .056) were positive and marginally short of significance at the 5% level, while green price had a negligible effect (p = .567). **H6 is supported; H4, H5 and H7 are not supported** at α = 0.05.

Table 16. Multiple regression: SCB on green marketing mix elements (Model 4)

Predictor	B	SE	β	t	p	95% CI	VIF	Hypothesis
Intercept	2.054	0.298	—	6.88	< .001	—	—	—
Green Product	0.129	0.069	.149	1.87	.063	[-0.007, 0.264]	1.46	H4: Not supported
Green Price	0.036	0.063	.041	0.57	.567	[-0.089, 0.161]	1.19	H5: Not supported
Green Promotion	0.183	0.067	.207	2.72	.007	[0.050, 0.316]	1.34	H6: Supported
Green Place	0.113	0.059	.137	1.92	.056	[-0.003, 0.230]	1.18	H7: Not supported

Dependent variable: SCB. $R^2 = .155$; adjusted $R^2 = .138$; $F(4, 195) = 8.97$, $p < .001$; $N = 200$.

Figure 4. Effect of green marketing mix elements on SCB (p < .05)*



5.8 Summary of hypothesis testing

Table 17. Summary of hypotheses (α = 0.05)

H	Relationship	β	p	Decision
H1	GMP → SCB	.490	< .001	Supported (reject H0)
H2	GMP → Green Purchase Intention	.545	< .001	Supported (reject H0)
H3	GMM → SCB	.382	< .001	Supported (reject H0)
H4	Green Product → SCB	.149	.063	Not supported (retain H0)
H5	Green Price → SCB	.041	.567	Not supported (retain H0)
H6	Green Promotion → SCB	.207	.007	Supported (reject H0)
H7	Green Place/Distribution → SCB	.137	.056	Not supported (retain H0)

Note: H4–H7 coefficients are from the multiple regression (Model 4).

6. Discussion

The results, based on the illustrative dataset, portray a coherent pattern. First, green marketing practices — operations, communication, packaging, innovation and stakeholder engagement — were the strongest correlates of both outcomes: GMP explained roughly 30% of the variance in purchase intention and 24% in SCB. This is consistent with the Theory of Planned Behaviour logic that firm-provided cues shape attitudes and intentions (Ajzen, 1991) and with evidence that green value and trust drive green purchase intentions (Chen & Chang, 2012). That GMP predicts intention more strongly than behaviour also mirrors the familiar intention–behaviour gap: converting intention into everyday behaviours such as disposal, advocacy and lifestyle change depends on additional factors beyond marketing, such as habits and social context (White et al., 2019).

Second, the overall green marketing mix significantly predicted SCB, but explained less variance than GMP (15% versus 24%). A possible reading is that GMP, by covering operations, packaging, innovation and stakeholder engagement, captures the credibility of the organisation behind the mix, whereas the mix items describe the offer itself.

Third, when the four Ps were examined together, promotion emerged as the only significant unique predictor, with product and place close to significance and price negligible. Persuasive, credible and personalised communication — precisely what AI-enabled tools can deliver at scale — appears to matter most once product, price and place are held constant. The weak unique effect of price suggests that, among these respondents, affordability was not the main differentiator of sustainable behaviour, although the bivariate correlation (r = .188) shows it is not irrelevant. Because green product and green place fell just short of significance (p = .063 and .056), a larger sample might change these conclusions and they should be interpreted cautiously.

Fourth, demographic and exposure groups did not differ significantly in purchase-intention or SCB levels (chi-square and ANOVA), implying that the influence of green marketing is broad-based rather than confined to particular demographic segments. The gradient in purchase intention across exposure levels (3.51 → 3.79), though not significant at 5%, points to a direction worth testing with a larger sample and an explicit AI-exposure measure.

7. Implications

7.1 Theoretical implications

The study extends green marketing research by (i) testing organisational practices and the marketing mix within one model, (ii) separating purchase intention from broader sustainable behaviour, and (iii) situating both in an AI-enabled marketing context. It also illustrates the value of decomposing the green mix, since aggregate effects can conceal differences among its elements.

7.2 Managerial implications

- **Invest in credible, personalised green communication.** Use AI to tailor eco-messages and recommendations, but back every claim with verifiable evidence and labels to avoid greenwashing (Delmas & Burbano, 2011).
- **Make sustainability visible in operations and packaging.** Practices such as recyclable packaging and transparent operations supply the tangible proof that supports intention.

- **Do not rely on price alone.** Personalised offers can help affordability, but communication and product credibility appear to carry more weight.
- **Bridge the intention–behaviour gap.** Provide post-purchase support such as recycling instructions, take-back schemes and community engagement to encourage responsible usage, disposal and advocacy.

7.3 Policy implications

Regulators can support genuine green marketing by strengthening standards for environmental claims and eco-labels and by encouraging transparent digital disclosure, so that AI-driven communication informs rather than misleads consumers.

8. Limitations and Scope for Future Research

- The cross-sectional, self-reported design limits causal inference and may involve common-method bias; longitudinal or experimental designs are recommended.
- Non-probability sampling limits generalisability; probability sampling across regions would strengthen external validity.
- Constructs were measured with two-item dimension scales; multi-item scales and confirmatory factor analysis (validity assessment) would strengthen measurement.
- Normality was assessed via skewness and kurtosis and regression assumptions were checked through VIF; residual diagnostics and robust or ordinal methods can be added.
- Future work may test mediation (e.g., purchase intention → SCB), moderators (environmental concern, trust, age, income) and structural equation modelling, and may compare product categories.

9. Conclusion

This paper examined how AI-enabled green marketing practices and the green marketing mix influence green purchase intention and sustainable consumer behaviour. Using Excel-based analysis of 200 responses (illustrative data), the study found that green marketing practices significantly and positively influence both purchase intention and sustainable behaviour, that the overall green marketing mix significantly influences sustainable behaviour, and that green promotion is the strongest unique element of the mix, while product, price and place did not reach significance at the 5% level. Group differences by demographics and exposure were not significant. For organisations, the message is to combine credible, AI-personalised green communication with visible sustainable operations and packaging. Replacing the illustrative dataset with real survey responses will convert this draft into a complete empirical paper.

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Author check: please verify each reference (volume, pages, DOI) against the original source and add further studies from your own literature review.

Appendix A: Questionnaire

Section A – Respondent profile: Gender; Age group; Education; Annual household income (INR); How often do you encounter AI-enabled green marketing (recommendations, chatbots, personalised eco-offers)? (Rarely / Sometimes / Often).

Section B – Statements (1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree):

Code	Construct / dimension	Statement
GMP1	Green Marketing Practices – Environmentally friendly operations	The brand uses AI-based tools (e.g., demand forecasting, route optimisation) to reduce waste and energy use in its operations.
GMP2	Green Marketing Practices – Environmentally friendly operations	The brand's operations appear environmentally responsible and it is transparent about its eco-impact.
GMP3	Green Marketing Practices – Green communication & promotion	The brand uses AI-driven personalised messages and recommendations to communicate its environmental initiatives.
GMP4	Green Marketing Practices – Green communication & promotion	The brand's green communication (chatbots, social media, e-mail) is clear, credible and informative.
GMP5	Green Marketing Practices – Sustainable packaging	The brand uses recyclable, biodegradable or minimal packaging.
GMP6	Green Marketing Practices – Sustainable packaging	The brand provides digital information (e.g., QR codes, apps) on how to reuse or recycle its packaging.
GMP7	Green Marketing Practices – Green product innovation	The brand regularly introduces eco-friendly products supported by data and AI-driven innovation.
GMP8	Green Marketing Practices – Green product innovation	The brand's new products use fewer natural resources and generate lower emissions.
GMP9	Green Marketing Practices – Stakeholder engagement & collaboration	The brand collaborates with suppliers, NGOs and communities on environmental initiatives.
GMP10	Green Marketing Practices – Stakeholder engagement & collaboration	The brand engages consumers on digital platforms to receive feedback and ideas on sustainability.
GP1	Green Marketing Mix – Green Product	Green products offered by the brand are of good quality and environmentally safe.
GP2	Green Marketing Mix – Green Product	Eco-labels and certifications on the brand's products are clear and trustworthy.

Code	Construct / dimension	Statement
PR1	Green Marketing Mix – Green Price	The price of green products is fair for the environmental benefits they provide.
PR2	Green Marketing Mix – Green Price	AI-based personalised offers and discounts make green products affordable for me.
PM1	Green Marketing Mix – Green Promotion	Green promotions (ads, influencers, social media) effectively convey environmental benefits.
PM2	Green Marketing Mix – Green Promotion	The brand's promotional claims about being green are credible (not greenwashing).
PL1	Green Marketing Mix – Green Place / Distribution	Green products are easily available in the stores and online platforms I use.
PL2	Green Marketing Mix – Green Place / Distribution	The brand's distribution (e.g., low-carbon delivery, take-back of packaging) is environmentally responsible.
SCB1	Sustainable Consumer Behaviour – Preference for green products	I prefer green products over conventional alternatives when quality is comparable.
SCB2	Sustainable Consumer Behaviour – Preference for green products	I actively look for eco-friendly options when shopping.
SCB3	Sustainable Consumer Behaviour – Responsible usage & disposal	I use products in a way that conserves energy and resources.
SCB4	Sustainable Consumer Behaviour – Responsible usage & disposal	I recycle or dispose of packaging and used products responsibly.
SCB5	Sustainable Consumer Behaviour – Advocacy & word of mouth	I recommend green products and brands to friends and family.
SCB6	Sustainable Consumer Behaviour – Advocacy & word of mouth	I share my positive experiences of sustainable brands online or offline.
SCB7	Sustainable Consumer Behaviour – Long-term sustainable lifestyle	Sustainability is a regular part of my daily lifestyle choices.
SCB8	Sustainable Consumer Behaviour – Long-term sustainable lifestyle	I am willing to change my consumption habits for long-term environmental benefit.
GPI1	Green Purchase Intention – Purchase intention	I intend to buy green products in the near future.
GPI2	Green Purchase Intention – Purchase intention	I am willing to pay a little more for green products.
GPI3	Green Purchase Intention – Purchase intention	I will consider environmental impact when making my next purchase.
GPI4	Green Purchase Intention – Purchase intention	I plan to switch to brands that follow green marketing practices.

Appendix B: Excel Analysis Output

This appendix reproduces the calculation sheets of the accompanying workbook (Green_Marketing_Analysis.xlsx). The workbook contains the live formulas and the 200-row dataset; the tables below are its recalculated outputs. As in Section 5, all values derive from the simulated illustrative data.

B1. Reliability analysis (Reliability sheet)

A. Item statistics

Item	Construct	Mean	Std. Dev.	Variance
GMP1	Green Marketing Practices	3.615	0.906	0.821
GMP2	Green Marketing Practices	3.700	0.956	0.915
GMP3	Green Marketing Practices	3.615	0.949	0.901
GMP4	Green Marketing Practices	3.720	0.903	0.816
GMP5	Green Marketing Practices	3.650	0.895	0.802
GMP6	Green Marketing Practices	3.655	0.917	0.840
GMP7	Green Marketing Practices	3.685	0.900	0.810
GMP8	Green Marketing Practices	3.630	0.852	0.727
GMP9	Green Marketing Practices	3.690	0.937	0.878
GMP10	Green Marketing Practices	3.700	0.821	0.673
GP1	Green Marketing Mix	3.605	0.918	0.843
GP2	Green Marketing Mix	3.525	0.874	0.763
PR1	Green Marketing Mix	3.665	0.898	0.807
PR2	Green Marketing Mix	3.595	0.892	0.795
PM1	Green Marketing Mix	3.645	0.885	0.783
PM2	Green Marketing Mix	3.575	0.905	0.818
PL1	Green Marketing Mix	3.615	1.016	1.032
PL2	Green Marketing Mix	3.670	0.892	0.795
SCB1	Sustainable Consumer Behaviour	3.670	0.936	0.875
SCB2	Sustainable Consumer Behaviour	3.735	0.836	0.698
SCB3	Sustainable Consumer Behaviour	3.745	0.857	0.734
SCB4	Sustainable Consumer Behaviour	3.700	0.902	0.814
SCB5	Sustainable Consumer Behaviour	3.655	0.922	0.850
SCB6	Sustainable Consumer Behaviour	3.790	0.900	0.810
SCB7	Sustainable Consumer Behaviour	3.715	0.859	0.737

Item	Construct	Mean	Std. Dev.	Variance
SCB8	Sustainable Consumer Behaviour	3.740	0.920	0.847
GPI1	Green Purchase Intention	3.625	0.910	0.829
GPI2	Green Purchase Intention	3.690	0.888	0.788
GPI3	Green Purchase Intention	3.645	0.924	0.853
GPI4	Green Purchase Intention	3.665	0.840	0.706

B. Cronbach's alpha [alpha = k/(k-1) x (1 - sum of item variances / variance of total score)]

Scale	Items (k)	Sum of item variances	Variance of total score	Cronbach's alpha	Interpretation
Green Marketing Practices (GMP)	10	8.182	49.803	0.929	Excellent
Green Marketing Mix (GMM)	8	6.637	20.145	0.766	Acceptable
Sustainable Consumer Behaviour (SCB)	8	6.366	30.480	0.904	Excellent
Green Purchase Intention (GPI)	4	3.176	8.226	0.819	Good

Rule of thumb (Nunnally, 1978): alpha >= 0.70 indicates acceptable internal consistency.

B2. Correlation analysis (Correlation sheet)

N	**200**

A. Correlation coefficients (r)

Variable	GMP	GMM	GP	PR	PM	PL	GPI	SCB
GMP	1	0.454	0.347	0.280	0.362	0.288	0.545	0.490
GMM	0.454	1	0.774	0.656	0.720	0.659	0.451	0.382
GP	0.347	0.774	1	0.333	0.459	0.383	0.295	0.310
PR	0.280	0.656	0.333	1	0.341	0.190	0.300	0.187
PM	0.362	0.720	0.459	0.341	1	0.241	0.320	0.323
PL	0.288	0.659	0.383	0.190	0.241	1	0.350	0.252
GPI	0.545	0.451	0.295	0.300	0.320	0.350	1	0.354
SCB	0.490	0.382	0.310	0.187	0.323	0.252	0.354	1

B. Two-tailed significance (p-value) [t = r x SQRT((n-2)/(1-r^2))]

Variable	GMP	GMM	GP	PR	PM	PL	GPI	SCB
GMP	-	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
GMM	0.0000	-	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
GP	0.0000	0.0000	-	0.0000	0.0000	0.0000	0.0000	0.0000
PR	0.0001	0.0000	0.0000	-	0.0000	0.0070	0.0000	0.0079
PM	0.0000	0.0000	0.0000	0.0000	-	0.0006	0.0000	0.0000
PL	0.0000	0.0000	0.0000	0.0070	0.0006	-	0.0000	0.0003
GPI	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-	0.0000
SCB	0.0000	0.0000	0.0000	0.0079	0.0000	0.0003	0.0000	-

Interpretation guide: |r| < 0.30 weak; 0.30-0.59 moderate; >= 0.60 strong. p < 0.05 = significant.

B3. Chi-square tests (ChiSquare sheet)

Category cut-offs for composite scores (edit the yellow cells)

Low if score <		**3.250**	**Score below C5 = Low; between C5 and C6 = Moderate; C6 or above = High. (Assumption: analyst-chosen bands on the 1-5 scale.)**
High if score >=		4	

Test 1: Gender x Green Purchase Intention level

H0: Gender and Green Purchase Intention level are independent.

H1: Gender and Green Purchase Intention level are associated.

Observed	Low	Moderate	High	Total
Male	26	33	35	94
Female	22	38	46	106
Total	48	71	81	200

Expected	Low	Moderate	High	Total
Male	22.560	33.370	38.070	94
Female	25.440	37.630	42.930	106
Total	48	71	81	200

(O-E)^2/E	**Low**	**Moderate**	**High**
Male	0.525	0.0041	0.248
Female	0.465	0.0036	0.220

Chi-square statistic	**1.465**
Degrees of freedom	2
p-value	0.481
Critical value (alpha = 0.05)	5.991
Cross-check: CHITEST p-value	0.481
Cramer's V	0.086
Minimum expected count (should be >= 5)	22.560
Decision (alpha = 0.05)	Fail to reject H0 - no significant association

Test 2: Age group x Sustainable Consumer Behaviour level

H0: Age group and SCB level are independent.

H1: Age group and SCB level are associated.

Observed	**Low**	**Moderate**	**High**	**Total**
18-25	15	27	19	61
26-35	15	28	28	71
36-45	7	14	15	36
46 and above	4	15	13	32
Total	41	84	75	200

Expected	**Low**	**Moderate**	**High**	**Total**
18-25	12.505	25.620	22.875	61
26-35	14.555	29.820	26.625	71
36-45	7.380	15.120	13.500	36
46 and above	6.560	13.440	12	32
Total	41	84	75	200

(O-E)^2/E	**Low**	**Moderate**	**High**
18-25	0.498	0.074	0.656
26-35	0.014	0.111	0.071
36-45	0.020	0.083	0.167
46 and above	0.999	0.181	0.083

Chi-square statistic	**2.957**
Degrees of freedom	6
p-value	0.814
Critical value (alpha = 0.05)	12.592
Cross-check: CHITEST p-value	0.814
Cramer's V	0.086
Minimum expected count (should be >= 5)	6.560
Decision (alpha = 0.05)	Fail to reject H0 - no significant association

Test 3: Exposure to AI-enabled green marketing x Green Purchase Intention level

H0: AI exposure and Green Purchase Intention level are independent.

H1: AI exposure and Green Purchase Intention level are associated.

Observed	**Low**	**Moderate**	**High**	**Total**
Rarely	7	16	11	34
Sometimes	25	27	28	80
Often	16	28	42	86
Total	48	71	81	200

Expected	**Low**	**Moderate**	**High**	**Total**
Rarely	8.160	12.070	13.770	34
Sometimes	19.200	28.400	32.400	80
Often	20.640	30.530	34.830	86
Total	48	71	81	200

(O-E)^2/E	Low	Moderate	High
Rarely	0.165	1.280	0.557
Sometimes	1.752	0.069	0.598
Often	1.043	0.210	1.476

Chi-square statistic	7.149
Degrees of freedom	4
p-value	0.128
Critical value (alpha = 0.05)	9.488
Cross-check: CHITEST p-value	0.128
Cramer's V	0.134
Minimum expected count (should be >= 5)	8.160
Decision (alpha = 0.05)	Fail to reject H0 - no significant association

B4. One-way ANOVA (ANOVA sheet)

ANOVA 1: Sustainable Consumer Behaviour (SCB) by Age group

H0: Mean SCB is equal across all age groups.

H1: Mean SCB differs for at least one age group.

Group	n	Mean (SCB)	Std. Dev.
18-25	61	3.625	0.663
26-35	71	3.732	0.710
36-45	36	3.771	0.756
46 and above	32	3.809	0.627
Grand mean	200	3.719	

Source	SS	df	MS	F	p-value	F critical (0.05)
Between groups	0.905	3	0.302	0.630	0.596	2.651
Within groups	93.868	196	0.479			
Total	94.773	199				
Eta squared (effect size)	0.0096					

Source	SS	df	MS	F	p-value	F critical (0.05)
Decision (alpha = 0.05)	Fail to reject H0 - no significant difference					

Post-hoc pairwise comparisons (Bonferroni-adjusted t-tests using pooled MS within)

Comparison	Mean difference	t	Adjusted p	Significant?
18-25 vs 26-35	-0.107	-0.889	1	No
18-25 vs 36-45	-0.146	-1.003	1	No
18-25 vs 46 and above	-0.184	-1.215	1	No
26-35 vs 36-45	-0.038	-0.271	1	No
26-35 vs 46 and above	-0.076	-0.517	1	No
36-45 vs 46 and above	-0.038	-0.225	1	No

ANOVA 2: Green Purchase Intention (GPI) by Exposure to AI-enabled green marketing

H0: Mean GPI is equal across all AI-exposure levels.

H1: Mean GPI differs for at least one exposure level.

Group	n	Mean (GPI)	Std. Dev.
Rarely	34	3.515	0.754
Sometimes	80	3.572	0.713
Often	86	3.791	0.691
Grand mean	200	3.656	

Source	SS	df	MS	F	p-value	F critical (0.05)
Between groups	2.805	2	1.403	2.777	0.065	3.042
Within groups	99.499	197	0.505			
Total	102.305	199				
Eta squared (effect size)	0.027					
Decision (alpha = 0.05)	Fail to reject H0 - no significant difference					

Post-hoc pairwise comparisons (Bonferroni-adjusted t-tests using pooled MS within)

Comparison	Mean difference	t	Adjusted p	Significant?
Rarely vs Sometimes	-0.057	-0.393	1	No
Rarely vs Often	-0.276	-1.917	0.170	No
Sometimes vs Often	-0.219	-1.982	0.147	No

ANOVA 3: Sustainable Consumer Behaviour (SCB) by Income band

H0: Mean SCB is equal across all income bands.

H1: Mean SCB differs for at least one income band.

Group	n	Mean (SCB)	Std. Dev.
Below 3 lakh	33	3.515	0.798
3-6 lakh	58	3.841	0.695
6-10 lakh	67	3.647	0.657
Above 10 lakh	42	3.824	0.611
Grand mean	200	3.719	

Source	SS	df	MS	F	p-value	F critical (0.05)
Between groups	3.038	3	1.013	2.164	0.094	2.651
Within groups	91.735	196	0.468			
Total	94.773	199				
Eta squared (effect size)	0.032					
Decision (alpha = 0.05)	Fail to reject H0 - no significant difference					

Post-hoc pairwise comparisons (Bonferroni-adjusted t-tests using pooled MS within)

Comparison	Mean difference	t	Adjusted p	Significant?
Below 3 lakh vs 3-6 lakh	-0.325	-2.181	0.182	No
Below 3 lakh vs 6-10 lakh	-0.132	-0.909	1	No
Below 3 lakh vs Above 10 lakh	-0.309	-1.943	0.321	No
3-6 lakh vs 6-10 lakh	0.193	1.574	0.703	No
3-6 lakh vs Above 10 lakh	0.016	0.116	1	No

Comparison	Mean difference	t	Adjusted p	Significant?
6-10 lakh vs Above 10 lakh	-0.177	-1.315	1	No

B5. Regression analysis (Regression sheet)

Model 1 (H1): Green Marketing Practices -> Sustainable Consumer Behaviour

Dependent variable: SCB

Model summary	Value
R-squared	0.240
Multiple R	0.490
Adjusted R-squared	0.236
Std. error of estimate	0.603
Observations (N)	200

ANOVA	SS	Df	MS	F	Significance F
Regression	22.777	1	22.777	62.641	0.0000
Residual	71.996	198	0.364		
Total	94.773	199			

Coefficients	B (unstd.)	Std. error	t stat	p-value	Std. Beta	Lower 95%	Upper 95%
Intercept	1.961	0.226	8.674	0.0000	-	1.515	2.407
GMP	0.479	0.061	7.915	0.0000	0.490	0.360	0.599

H1: GMP -> SCB	SUPPORTED - significant positive effect

Model 2 (H2): Green Marketing Practices -> Green Purchase Intention

Dependent variable: GPI

Model summary	Value
R-squared	0.297
Multiple R	0.545
Adjusted R-squared	0.294
Std. error of estimate	0.603

Model summary	**Value**
Observations (N)	200

ANOVA	**SS**	**Df**	**MS**	**F**	**Significance F**
Regression	30.397	1	30.397	83.700	0.0000
Residual	71.907	198	0.363		
Total	102.305	199			

Coefficients	**B (unstd.)**	**Std. error**	**t stat**	**p-value**	**Std. Beta**	**Lower 95%**	**Upper 95%**
Intercept	1.626	0.226	7.196	0.0000	-	1.180	2.072
GMP	0.554	0.061	9.149	0.0000	0.545	0.434	0.673

H2: GMP -> GPI	**SUPPORTED - significant positive effect**

Model 3 (H3): Green Marketing Mix -> Sustainable Consumer Behaviour

Dependent variable: SCB

Model summary	**Value**
R-squared	0.146
Multiple R	0.382
Adjusted R-squared	0.141
Std. error of estimate	0.639
Observations (N)	200

ANOVA	**SS**	**Df**	**MS**	**F**	**Significance F**
Regression	13.816	1	13.816	33.791	0.0000
Residual	80.957	198	0.409		
Total	94.773	199			

Coefficients	**B (unstd.)**	**Std. error**	**t stat**	**p-value**	**Std. Beta**	**Lower 95%**	**Upper 95%**
Intercept	2.022	0.295	6.849	0.0000	-	1.440	2.605
GMM	0.470	0.081	5.813	0.0000	0.382	0.310	0.629

H3: GMM -> SCB	**SUPPORTED - significant positive effect**

Model 4 (H4-H7): Green Marketing Mix dimensions -> Sustainable Consumer Behaviour (multiple regression)

Dependent variable: SCB

Model summary	**Value**
R-squared	0.155
Multiple R	0.394
Adjusted R-squared	0.138
Std. error of estimate	0.641
Observations (N)	200

ANOVA	**SS**	**Df**	**MS**	**F**	**Significance F**
Regression	14.722	4	3.681	8.965	0.0000
Residual	80.051	195	0.411		
Total	94.773	199			

Coefficients	**B (unstd.)**	**Std. error**	**t stat**	**p-value**	**Std. Beta**	**Lower 95%**	**Upper 95%**	**VIF**
Intercept	2.054	0.298	6.882	0.0000	-	1.465	2.643	
Green Product	0.129	0.069	1.872	0.063	0.149	-0.0069	0.264	1.456
Green Price	0.036	0.063	0.573	0.567	0.041	-0.089	0.161	1.188
Green Promotion	0.183	0.067	2.720	0.0071	0.207	0.050	0.316	1.340
Green Place	0.113	0.059	1.921	0.056	0.137	-0.0030	0.230	1.183

H4: Green Product -> SCB	**NOT SUPPORTED - no significant effect**
H5: Green Price -> SCB	NOT SUPPORTED - no significant effect
H6: Green Promotion -> SCB	SUPPORTED - significant positive effect
H7: Green Place -> SCB	NOT SUPPORTED - no significant effect

Correlation matrix of predictors (used for VIF; VIF < 5 indicates no serious multicollinearity)

	Green Product	**Green Price**	**Green Promotion**	**Green Place**
Green Product	1	0.333	0.459	0.383
Green Price	0.333	1	0.341	0.190
Green Promotion	0.459	0.341	1	0.241
Green Place	0.383	0.190	0.241	1

Findings

Regression Analysis Findings (Regression Sheet)

The regression analysis tests whether Green Marketing Practices and the Green Marketing Mix predict Green Purchase Intention and Sustainable Consumer Behaviour. Statistical significance is assessed at the 5% level ($p < 0.05$).

Hypothesis	**Regression relationship**	**Standardised β**	**R^2 / Model R^2**	**p-value**	**Decision**
H1	GMP → SCB	.490	.240	< .001	Supported
H2	GMP → GPI	.545	.297	< .001	Supported
H3	GMM → SCB	.382	.146	< .001	Supported
H4	Green Product → SCB*	.149	.155 (Model 4)	.063	Not supported
H5	Green Price → SCB*	.041	.155 (Model 4)	.567	Not supported
H6	Green Promotion → SCB*	.207	.155 (Model 4)	.007	Supported
H7	Green Place/Distribution → SCB*	.137	.155 (Model 4)	.056	Not supported

* H4–H7 are coefficients from the multiple regression model in which Green Product, Green Price, Green Promotion and Green Place/Distribution were entered together. The overall model was significant: $R^2 = .155$, adjusted $R^2 = .138$, $F(4, 195) = 8.97$, $p < .001$.

Interpretation of the Findings

• Green Marketing Practices significantly and positively predicted Sustainable Consumer Behaviour ($\beta = .490$, $p < .001$), explaining 24.0% of its variance. Therefore, H1 is supported.

• Green Marketing Practices significantly predicted Green Purchase Intention ($\beta = .545$, $p < .001$), explaining 29.7% of its variance. H2 is supported.

• The overall Green Marketing Mix significantly predicted Sustainable Consumer Behaviour ($\beta = .382$, $p < .001$), explaining 14.6% of its variance. H3 is supported.

• When the four marketing-mix elements were analysed together, Green Promotion was the only statistically significant unique predictor of Sustainable Consumer Behaviour ($\beta = .207$, $p = .007$). H6 is supported.

• Green Product ($p = .063$) and Green Place/Distribution ($p = .056$) showed positive but non-significant coefficients at the 5% level. Green Price was not significant ($p = .567$). Therefore, H4, H5 and H7 are not supported.

• The results suggest that credible and informative green promotion may be particularly important, but the findings should be treated cautiously until the illustrative data are replaced with real survey responses.

Conclusion

Based on the illustrative regression output, the study indicates that Green Marketing Practices are positively associated with both Green Purchase Intention and Sustainable Consumer Behaviour. The overall Green Marketing Mix also predicts Sustainable Consumer Behaviour. Within the four individual mix elements, Green Promotion is the only significant unique predictor in the multiple regression model. These results provide a structured interpretation of the regression sheet, but they must not be presented as real empirical evidence until verified using the actual collected questionnaire data.