



Consumer Behavior towards Sustainable Products

Aradhana Sorout*¹, NP Singh²

¹School of Business Management and Commerce, MVN University, Haryana, India

² School of Business Management and Commerce, MVN University, Haryana, India

aradhana.sorout@mvn.edu.in, Aradhanasorout01@gmail.com

Abstract

One of the most tenacious issues confronting the world today is the degradation of environment at an alarming rate, caused by the over-use of natural resources to meet human needs. A viable solution lies in fostering a paradigm shift from the consumption of conventional to the adoption of eco-friendly products that exert the least adverse impact. This study attempts to identify the factors that impact sustainable consumption through survey-based research. Using a quantitative approach PLS-SEM (partial least square- structural equation modelling), the research tests the relationships between variables where green purchase intention acts as a mediating variable. The study contributes theoretically by integrating cognitive (sustainable packaging, eco-labelling) and emotional factors (emotional appeal) affecting consumer behavior. Moreover, the findings support the transition towards a more sustainable consumption behavior, considering it is no longer optional but essential.

Keywords: Green purchase intention (GPI), Eco-friendly products, sustainable behavior, green consumption, PLS-SEM

1. Introduction

Over the recent years, consumers are increasing concerned about the environmental consequences of incessant use of natural resources. They are becoming more conscious about sustainable consumption and eco-friendly products. The report of United Nations conference on environment and development held in Rio de Janeiro, 1992 had also clearly stated “To achieve sustainable development and a higher quality of life for all people, states should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies”. A solution lies in shifting the existing consumption patterns towards sustainability and more environment-friendly consumption (Kharbanda & Singh, 2022). Despite the desire for eco-friendly consumption, consumers could have diverse perceptions and intentions of eco-friendly products. Their acceptability of green products is based upon various factors and it is yet to know about consumers’ attitudes towards green purchase (Nguyen et al., 2020). Past researches have shown relationships between various factors affecting green purchase behavior among consumers. However, their effect on green purchase intention and consumption is yet to be analysed specially in emerging economies like India, where some consumers are unaware of the concept of eco-friendly products. (International Institute of Green Finance, 2021)

“Green consumer behavior is concerned with environmental issues or societal considerations that are reflected in purchase decisions” (Balaskas et al., 2023). The influence of environmental concerns and attitude contributes to the decision-making process. Over the past years, green

consumerism is rapidly evolving. Green marketing initiatives are now essential to strategic branding and product differentiation, going beyond simple corporate social responsibility activities. Despite their growing prevalence, consumer response to green marketing remains varied. Therefore, it becomes important to explore the factors leading to green purchase behavior. To study the factors influencing the intention and behavior of consumers to buy eco-friendly or green products, following research objectives were framed:

1.1 Research objectives

The objectives of the study are stated below:

- i. To analyse the influence of sustainable packaging, eco-labelling and emotional appeals (SEE) on sustainable purchase behavior (SPB) of consumers.
- ii. To determine the impact of each of these factors on green purchase intention (GPI) and green purchase behavior (GPB) of consumers.
- iii. To examine the mediating effect of green purchase intention (GPI) on purchase behavior of consumers.

2. Review of Literature

The growing concern over environmental degradation and research on consumer behavior for sustainable products has grown rapidly in the recent years. The previous literature also shows sustainable development concerns and integration of sustainability factors into consumer decision-making (Sorout et al., 2025). Research in this field is predominantly grounded in socio-cognitive theories, most notably the Theory of Planned Behavior (TPB) (Ajzen, 1991), which proposes that attitudes, subjective norms and perceived behavioral control forms behavioral intentions, which in turn predict behavior. Various studies have confirmed the utility of TPB in predicting sustainable consumption, and fostering green purchase intentions (GPI) (Paul et al., 2016; Yadav & Pathak, 2017).

Beyond cognitive antecedents, academicians have emphasized the role of psychological and emotional drivers. Emotional appeals and identity-based messaging often prove more decisive in influencing GPI rather than informational signs (White et al., 2011). A recent study based on meta-analysis illustrates that trust, attitude and perceived value predict the intention to purchase green products (Zhuang et al., 2021). However, the consumers who express favorable attitudes or intentions may not convert them into actual sustainable purchasing behavior. A persistent intention-behavior gap remains, due to certain barriers related to cost, limited availability, convenience and awareness issues (Joshi & Rahman, 2015). Among these, eco-labeling and sustainable packaging has been widely investigated. Eco-labelling reduces information asymmetry and increases consumer trust (Biswas & Roy, 2015). Similarly, sustainable packaging has emerged as a salient attribute indicating environmental responsibility. Evidence from emerging economies suggests packaging can positively shape green purchase intentions (GPI), though its impact may be moderated by the concern for price (Kanchanapibul et al., 2014).

Taken together, the literature highlights a multidimensional framework of consumer behavior regarding sustainable products. Therefore, the study proposes a conceptual model with Eco-

labelling, Sustainable packaging and Emotional appeals affecting green purchase behavior of consumers with green purchase intention acting as a mediating variable. The constructs were derived from past literature and also on the recommendations by various researchers across the globe. The independent constructs were given a name SEE (Sustainable Packaging, Eco-Labelling, Emotional Appeals) which is a summary of factors affecting sustainable consumption among consumers. The variables are defined as:

Sustainable Packaging (S): As per Sustainable Packaging Coalition (SPC) (2011), “Sustainable packaging is beneficial, safe and healthy for individuals and communities throughout its life cycle; meets market criteria for performance and cost; is sourced, manufactured, transported, and recycled using renewable energy; maximizes the use of renewable or recycled source materials; is manufactured using clean production technologies and best practices; is made from materials healthy in all probable end of life scenarios; is physically designed to optimize materials and energy; and is effectively recovered and utilised in biological and/or industrial cradle-to-cradle cycles”.

Eco-Labelling (E): As per UNEP, “Eco-labels are a means of measuring performance and also communicating and marketing the environmental credentials of a given product”.

Emotional Appeals (E): “Emotional appeals represent a psychological, social or symbolic desire that motivates consumers to purchase the product because of the feelings it elicits”. (Hall, 1963; Albers-Miller & Stafford, 1999; Kotler et al., 2010)

Green Purchase Intention (GPI): “Consumers’ willingness to purchase a green product over other non-green products in their purchase consideration is referred as green purchase intention”. (Hassan, 2013)

Green Purchase Behavior (GPB): “Green purchasing behavior (GPB) refers to purchasing environmentally friendly products also referred to as sustainable products or green products”. (Soomro et al., 2020)

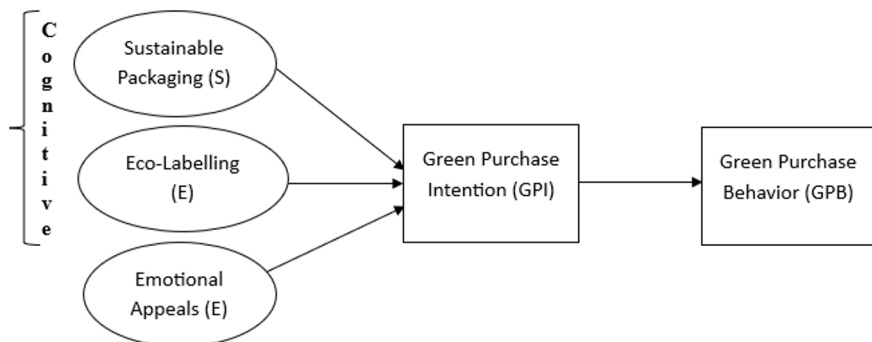


Fig 1. Conceptual Framework (SEE) derived from existing literature

Through this framework, the study offers three-fold key contributions to the existing field of research. First, it develops an integrated framework combining cognitive (eco-labeling, sustainable packaging) and emotional (emotional appeals) factors, a combination rarely examined collectively in prior studies. Second, it empirically validates this framework in an emerging economy context, addressing a geographical and cultural gap in green marketing research that has been predominantly focused on developed-countries. Third, by employing PLS-SEM and establishing green purchase intention as a mediating variable between green marketing initiatives and green purchase behavior, the study provides a robust and novel understanding of how psychological mechanisms convert green marketing efforts into actual consumer behavior.

2.1 Hypothesis development

Based on the reviewed studies and above framework, the following hypothesis were framed:

H₁: Sustainable Packaging positively influences green purchase intention (GPI) of consumers.

H₂: Eco-Labeling has a positive influence on green purchase intention (GPI) of consumers.

H₃: Emotional Appeals positively affects the green purchase intention (GPI) of consumers.

H₄: Green Purchase Intention (GPI) affects Green Purchase Behavior (GPB) of consumers.

H₅: Green Purchase Intention (GPI) mediates the relationship between eco-labelling and eco-friendly purchase behavior.

H₆: Green Purchase Intention (GPI) mediates the relationship between eco-friendly packaging of products and sustainable purchase behavior.

H₇: Green Purchase Intention (GPI) mediates the relationship between emotional appeal of a product and sustainable purchase behavior.

3. Research Methodology

The study analyses the relationship between factors affecting sustainable consumption and the intention to buy green products. Through a literature derived framework and using a quantitative approach, the research focusses on delving into the interplay of sustainable consumption behavior patterns. For collecting data, consumers ranging from 18-60 years of age were approached and due to paucity of time 185 responses were collected. Consumers were approached in-person as well as in online mode using a questionnaire. The questionnaire was developed on a 5-point Likert scale. It was taken into consideration that no negatively worded questions, socially charged questions or double-barreled questions were included in the questionnaire. The analysis was done using PLS-SEM along with bootstrapping method and the results of the analysis were presented in tabular form in the paper.

4. Research Findings

The analysis was done using PLS SEM through a two-step method. Both measurement model and structural model was developed. The measurement model developed through 'confirmatory factor analysis' (CFA) included both Convergent and Discriminant validity. While the structural model included path analysis and mediation analysis.

4.1 Measurement model evaluation

In the measurement model, both convergent validity and discriminant validity approaches were used in order to assess the reliability of the data as well as the validity and the constructs (F. Hair Jr et al., 2014; Fornell & Larcker, 1981). The convergent validity was assessed using factor(item) loadings, composite reliability (CR), Cronbach's Alpha, and Average variance Extracted (AVE). The VIF values were also calculated in order to check multi-collinearity issues. In order to validate the measurement model, the convergent validity was assessed and the results are presented in table1.

Table 1: Convergent validity

Constructs	Items	Factor loading	Cronbach alpha	CR	AVE	VIF values
Sustainable Packaging	SP1	0.622	0.555	0.577	0.312	1.733
	SP2	0.854				2.093
	SP3	0.150				1.328
	SP4	0.640				1.464
	SP5	-0.101				1.09
Eco-Labeling	EL1	0.941	0.878	0.917	0.787	2.842
	EL2	0.948				3.485
	EL3	0.760				1.991
Emotional Appeals	EA1	0.933	0.675	0.828	0.629	2.825
	EA2	0.865				2.637
	EA3	0.520				1.117
Green Purchase Intention	GPI1	0.926	0.742	0.839	0.651	2.267
	GPI2	0.933				2.585
	GPI3	0.475				1.246
Green Purchase Behavior	GPB1	0.799	0.876	0.908	0.666	1.978
	GPB2	0.855				2.96
	GPB3	0.894				2.808
	GPB4	0.827				2.145
	GPB5	0.690				1.871

The measurement model was assessed using factor loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and variance inflation factor (VIF) values to ensure construct reliability and validity. The constructs or variables being studied are shown in the first column and items used to measure these constructs are shown in the second column. Factor loadings, which reflects the association between each item and its corresponding construct are shown in the third column of the table. The values of Cronbach alpha reflecting the internal consistency or dependability of the items within each construct are over the acceptable value of 0.5. The values of composite reliability (CR) which shows the correlation between different items of the construct and Average variance extracted (AVE) reflecting the proportion of the construct's variance based on all the items of the construct are also above the acceptable value of 0.5 except for a few. This shows strong convergent validity within the constructs. Moreover, the values of VIF of all the items are also within the acceptable limit i.e. less than 5 showing no issues of multi-collinearity.

4.2. Structural model assessment

The Structural model assessment shows the results of path analysis and mediation analysis using the analysis of Coefficients (β), P-values, T-values, Standard errors, and confidence interval bounds (upper & lower limits), derived via 5000-bootstrap resampling method in PLS- SEM. The proposed hypotheses were tested with a p-value threshold of 0.05. The figure 2 shows the structural relationship between the constructs and p-values determining the acceptance or rejection of a hypothesis.

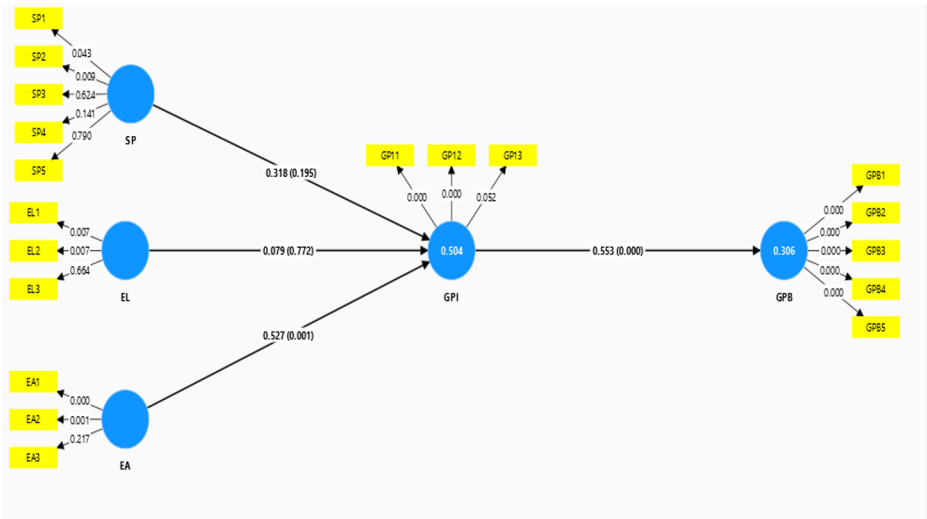


Fig. 2: Structural model assessment [source: authors' creation using Smart PLS 4]

4.3 Discriminant validity

Discriminant validity measures the degree of independence between measures of distinct qualities. In order to measure it, two approaches are used, one is "heterotrait-monotrait ratio of correlations" (HTMT) proposed by Henseler et al., (2015). The correlations between constructs (Heterotrait) must be lower than the correlations within constructs (Monotrait). As a primary criterion, the HTMT ratio should be below an established threshold value of 0.85 or 0.9 (Ermawati, 2018; Clark and Watson, 2019; Roemer et al., 2021). To verify the discriminant validity, the Fornell–Larcker criterion is also used and the results of both the approaches are shown in the table 2 and 3.

Table 2: HTMT Ratio

	Green Purchase Intention	Emotional Appeal	Green Purchase Behavior	Sustainable Packaging	Eco-labelling

Green Purchase Intention					
Emotional Appeal	0.670				
Green Purchase Behavior	0.771	0.710			
Sustainable Packaging	0.722	0.668	0.654		
Eco-labelling	0.381	0.227	0.264	0.384	

Table 3: Farnell Larcker Criteria

	Green Purchase Intention	Emotional Appeal	Green Purchase Behavior	Sustainable Packaging	Eco-labelling
Green Purchase Intention	0.807				
Emotional Appeal	0.370	0.793			
Green Purchase Behavior	0.691	0.546	0.816		
Sustainable Packaging	0.596	0.448	0.629	0.558	
Eco-labelling	0.339	0.156	0.215	0.228	0.887

The findings of path analysis include regression-coefficients (beta), standard deviation (SD), t-statistics, p-values (P), confidence interval limits (LL & UL), and observations on the association between the independent variables (Sustainable Packaging, Eco-labelling, Emotional Appeal and Green Purchase Intention) and the Dependent variable (Green Purchase Behavior). Sustainable packaging shows a positive but statistically insignificant relationship with green purchase intention ($\beta = 0.318$, $p = 0.195$), suggesting that even though eco-friendly packaging is valued by consumers, it does not significantly influence their choice to purchase green products. Similarly, Eco-labelling has an insignificant influence on green purchase intention ($\beta = 0.079$, $p = 0.772$), implying that consumers might be unaware of eco-labels or may be their presence does not influence much their intention to purchase. However, Emotional appeal has a significant positive relationship with green purchase intention (Beta = 0.527, P = 0.001) supporting hypothesis 3. This highlights the importance of affective and persuasive marketing strategies to motivate consumers toward green product adoption.

In addition to this, green purchase intention also strongly and significantly predicts green purchase behavior ($\beta = 0.553$, $p < 0.001$). This relationship confirms the intention-behavior linkage as proposed in consumer behavior theories such as the Theory of Planned Behavior (TPB).

Table 4: Path analysis

path analysis	beta	standard deviation	t-statistics	p values	LL	UL	Remarks
Sustainable Packaging-> Green Purchase Intention	0.318	0.33	1.508	0.195	-0.791	0.784	Insignificant
Eco-labelling-> Green Purchase Intention	0.079	0.211	0.985	0.772	-0.278	0.473	Insignificant

Emotional Appeal-> Green Purchase Intention	0.527	0.203	0.567	0.001	0.328	0.488	significant
Green Purchase Intention-> Green Purchase Behavior	0.553	0.084	8.272	0.000	0.465	0.818	significant

Table 5: Mediation Path analysis

Mediation path	beta	standard deviation	t-statistics	p values	L L	U L	Remarks
Sustainable Packaging x Green Purchase Intention-> Green Purchase Behavior	0.344	0.237	1.451	0.147	-0.581	0.565	No mediation
Eco-labelling x Green Purchase Intention-> Green Purchase Behavior	0.144	0.146	0.981	0.327	-0.193	0.348	No mediation
Emotional Appeal x Green Purchase Intention-> Green Purchase Behavior	0.08	0.147	0.543	0.587	-0.216	0.355	No mediation

The mediation analysis examined whether Green Purchase Intention (GPI) mediates the relationship between Sustainable Packaging, Eco-labelling, Emotional Appeal, and Green Purchase Behavior (GPB). The results indicate that none of the mediation paths were statistically significant. In the direct path model, emotional appeal was found to have a strong and significant effect on green purchase intention, and green purchase intention significantly influenced green purchase behavior. But the mediation analysis did not significantly mediate the relationship between them, reflecting the intention–behavior gap in sustainable consumption.

5. Discussion and Conclusion

While some studies have considered the factors that affect the sustainable purchase intention of consumers, the current study enhanced the understanding in a developing economy. The findings of the study revealed both consistencies and deviations from prior research on green consumer behavior. In the direct model, emotional appeal emerged as a significant predictor of green purchase intention supporting hypothesis 3, and consistent with Hartmann and Apaolaza-Ibáñez (2012), who emphasized that affective signs such as pride, joy, or even guilt are powerful motivators for green purchasing intentions. However, during mediation analysis green purchase intention failed to show the influence of emotional appeal to green purchase behavior. This suggests the presence of intention–behavior gap (Vermeir & Verbeke, 2006), where favorable intentions do not necessarily result into consistent sustainable purchasing actions.

The results for sustainable packaging and eco-labelling also needs discussion. Both the factors showed positive but insignificant effects on green purchase intention, and failed to show an indirect

influence on green purchase behavior with GPI acting as a mediator. Prior studies reported that informational and functional cues alone lack the persuasive power to drive actual purchases, especially in emerging markets (Testa et al., 2015). Eco-labels, even if acknowledged by consumers do not create sufficient purchase intention to drive actual sustainable purchasing behavior. Furthermore, green purchase intention predicting green purchase behavior reaffirms the intention-behavior link proposed in the Theory of Planned Behavior (Ajzen, 1991).

The findings emphasized that emotional and psychological factors play a more decisive role than functional or informational cues (such as packaging and labeling) in shaping consumers' green purchasing intentions. But fails to have an influence on the actual purchasing decision through the mediating role of GPI, pointing to its limitations as an effective mediator. The results also provide important insights for managers and marketers aiming to promote sustainable consumption. The insignificant effect of sustainable packaging and eco-labelling on green purchase intention indicates that relying solely on functional attributes and information cues may not be sufficient to influence consumer decision-making. Rather emotional appeals are more effective in motivating green purchase intentions and emerges as the most powerful driver.

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