



## Enhancing the Theory of Planned Behavior with Perceived Consumer Effectiveness and Environmental Concern towards Pro-Environmental Purchase Intentions for Eco-Friendly Apparel: A Review Article

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### Abstract

The textile sector has become a significant source of pollution due to increasing carbon emissions, heightened greenhouse gas emissions, and growing landfill contributions. In response, the industry is turning towards sustainable fashion, which is gaining popularity as an eco-friendly practice. This study utilized the theory of planned behavior (TPB) alongside variables such as environmental concern, personal moral norms, and perceived consumer effectiveness to predict eco-friendly apparel purchasing intentions among educated Indian youth. The research applied variance-based partial least squares structural equation modeling (PLS-SEM) to assess the proposed model. Results revealed that perceived behavioral control significantly and positively impacts purchasing intentions, followed by personal moral norms, general attitude, and perceived consumer effectiveness. Environmental concern was shown to indirectly influence purchasing intentions via the primary TPB variables and personal moral norms. Additionally, multi-group analysis (MGA) was used to investigate the moderating effects of perceived consumer effectiveness on the attitude-intention relationship, finding that individuals with higher perceived effectiveness displayed a more consistent attitude-intention correlation compared to those with lower perceived effectiveness. This study offers valuable insights for professionals and policymakers, suggesting the development of tailored sustainable marketing strategies and policies to address local market conditions.

**Keywords:** Pro-environmental purchase, local market conditions, environmental concern, environmental concern, personal moral norms

### 1. Introduction

The apparel manufacturing sector stands out as a key player in the Indian economy, contributing significantly to various aspects such as industrial production, gross domestic product (GDP), export earnings, and employment. With its substantial contribution of 13% to overall industrial production, 2.3% to GDP, and 12% to export earnings, and employing over 45 million individuals, it holds a pivotal position (Tyagi, 2020). India's status as one of the largest manufacturers and the fifth-largest exporter of apparel globally in 2019 underscores its significance in the industry (Statista, 2020). However, the rapid growth in apparel production and consumption has taken a toll on the environment, resulting in significant greenhouse gas emissions and escalating landfill waste, making the apparel industry the second-largest contributor to environmental harm worldwide. The proliferation of fast fashion has further exacerbated the situation, compelling the industry to adopt unsustainable manufacturing practices, leading to increased environmental degradation and health concerns. Transitioning to organically grown textiles and fibers is imperative to mitigate these adverse impacts of fabric production (Roozen et al., 2021). The growing interest among Indian consumers in purchasing eco-friendly apparel has transformed it into a burgeoning market for sustainable fashion, buoyed by the country's large youth population, which constitutes around 400 million, one-third of the global workforce (Stanley, 2017). Recognizing this opportunity, numerous apparel manufacturing companies are embracing sustainable practices to cater to consumer preferences, values, and lifestyles (Chaudhary & Bisai, 2018). While various research studies have explored consumer behavior intentions towards green hotels, products, organic food, and electric vehicles, there remains a significant gap in understanding the factors influencing the purchase intention of eco-friendly apparel in developing economies. This study seeks to address this gap by examining the purchase intentions of educated Indian youth towards eco-friendly apparel within the framework of sustainable apparel. It investigates the potential influence of three core predictors of purchase intention outlined in the theory of planned behavior model. Furthermore, the study extends the model by introducing three additional variables: environmental concern (EC), personal moral norm (PMN), and perceived consumer effectiveness (PCE). Additionally, the study explores PCE as

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a moderator between consumer attitude and eco-friendly apparel purchase intention, contributing to the existing body of knowledge. Ultimately, the insights garnered from this study can inform professionals and policymakers in devising sustainable marketing strategies and policies tailored to the unique conditions of the Indian market.

## **2. Theoretical background and hypothesis development**

Green consumption behavior has the potential to significantly mitigate the adverse impact of consumption on the environment. Pro-environmental behavior, as conceptualized by Kollmuss and Agyeman (2002), encompasses deliberate actions aimed at reducing an individual's negative environmental footprint. In recent years, researchers have turned to the Theory of Planned Behavior (TPB) to understand the underlying motivations driving specific behaviors, as evidenced by studies such as that of Ru et al. (2019), who demonstrated its effectiveness. Shukla (2019) applied the TPB model to assess the purchase intentions of Indian millennials towards eco-friendly products, highlighting the substantial influence of the model's core predictors on behavioral intention. Similarly, Yadav and Pathak (2017) utilized the TPB framework to explore consumer behavior towards green products, validating its efficacy in the Indian context. Shalender and Sharma (2020) extended the TPB model by incorporating environmental concern to assess consumer adoption intentions towards electric vehicles in India.

The three core predictors in the TPB—Attitude (AT), Subjective Norm (SN), and Perceived Behavioral Control (PBC)—have been identified as significant influencers of consumers' purchase decisions:

H1: Attitude towards eco-friendly apparel positively impacts purchase intention. H2: Subjective norm positively influences purchase intention for eco-friendly apparel. H3: Perceived behavioral control positively affects purchase intention for eco-friendly apparel.

Additionally, Personal Moral Norms (PMN), as explained by Ajzen (1991) as a sense of obligation towards pro-social behavior, have been recognized as a crucial factor influencing consumer behavioral intentions. Scholars like S. Wang et al. (2016) have emphasized that individuals who prioritize community welfare are more inclined to purchase eco-friendly products. Shalender and Sharma (2020) have further asserted that the alignment between PMN and eco-friendly products affects purchasing behavior. However, while literature generally supports a positive relationship between high PMN and purchase intention towards eco-friendly products, there is limited evidence specifically regarding apparel products (Ru et al., 2019).

H4: Personal Moral Norms positively influence Purchase Intention for eco-friendly apparel.

Environmental Concern (EC) has emerged as a significant factor driving consumer purchase decisions. Researchers such as Jaiswal and Kant (2018), Kim and Choi (2005), and Zhang et al. (2019) have highlighted EC as a key motivator for purchasing eco-friendly products. Bamberg (2003) demonstrated that EC indirectly influences purchase behavioral intentions through the core variables of the TPB model. Moreover, studies by Chen and Tung (2014), S. Wang et al. (2016), and Zhang et al. (2019) have shown that high EC directly influences AT, SN, and PBC, thereby impacting purchase intention towards eco-friendly products. Additionally, Paul et al. (2016) established that EC enhances purchase intention for green products by influencing the core variables of the TPB. Furthermore, EC has been found to positively influence PMN, which subsequently affects purchase behavior intention (P. Wang et al., 2014).

The following hypotheses are posited based on the aforementioned findings:

H6: Environmental concern positively influences subjective norms.

H7: Environmental concern has a positive association with perceived behavioral control.

H8: Environmental concern is positively linked to personal moral norms.

H9: Environmental concern correlates positively with purchase intention towards eco-friendly apparel.

## **3. Research Methodology**

Quantitative research employing a cross-sectional research design has been utilized to investigate the purchase intentions of young individuals towards eco-friendly apparel. A cross-sectional survey design, characterized by its observational nature, provides a snapshot of the population of interest at a specific point in time (Lavrakas, 2008).

A questionnaire comprising multiple-item latent constructs served as the primary survey instrument for this study. The focus was on individuals aged 18 to 34 with undergraduate or higher educational

qualifications. This age group, as outlined in the Youth in India Report (2017), accounts for 34.5% of the total national population and over 30% of the population in the broader Asian region. Additionally, findings from the DuPont Green Living Survey (2014) indicate that Indian youth are well-informed about eco-friendly products and express confidence in the environmental benefits associated with their usage. It is suggested that individuals within this educated age cohort can better grasp the concept of eco-friendly products. Moreover, recent reports (2019) suggest a growing preference among Indian consumers for sustainable and reliable brands, with Millennials (18–34 years) leading the shift in purchasing patterns within the sustainable apparel segment. To ensure the validity and clarity of the survey instrument, it was evaluated by two subject matter experts and one industry expert with relevant knowledge of the topic and scale. Pilot testing involving 10 graduates, 10 postgraduates, and 5 research scholars was conducted, and modifications were made based on feedback to enhance clarity. The choice of the Delhi National Capital Region (NCR) as the study area stems from its status as India's largest industrial cluster. The region, as assessed by the Central Pollution Control Board (CPCB), faces critical levels of water and air pollution, with severe soil pollution. This pollution severity underscores the rationale for selecting Delhi-NCR as the study area. The questionnaire consisted of 24 statements alongside questions regarding respondents' demographic profiles. Delhi-NCR, known as India's retail mall hub with a strong presence of national and international brands, was chosen as the study area. Respondents were recruited using a non-probabilistic convenience sampling method, with enumerators exercising subjective judgment to approach individuals in malls and retail outlets located in Noida, Delhi, and Gurgaon. The sampling was based on the concentration and popularity of brands in these regions. Data collection took place from mid-July to the end of the year in 2019, with assurances provided to respondents that their data would be used solely for academic research purposes. The data collection process involved briefing respondents on eco-friendly apparel concepts before presenting them with the questionnaire measuring eco-friendly apparel purchase intent and demographic information. Additionally, some survey instruments were distributed via social media platforms to accommodate respondents' convenience.

#### **4. Data analysis and result**

Due to the study's predictive and exploratory nature, Partial Least Squares-Structural Equation Modeling (PLS-SEM) was selected. PLS-SEM is widely accepted due to its robustness in handling sample size considerations, lack of strict measurement property requirements, and its ability to predict the target variable. Data analysis was conducted using Smart-PLS 2.0 and SPSS 18.0 software. The structural equation modeling followed the two-step approach outlined by Anderson and Gerbing (1988). Initially, the measurement model was scrutinized to ensure a linear relationship between explicit variables and latent constructs. Subsequently, the structural model was assessed to establish path relationships between constructs.

##### **4.1. Assessment of the measurement model**

This analysis adheres to the guidelines set forth by Hair et al. (1998) concerning the measurement of construct reliability and validity. Indicators with factor loadings below .7 were removed, and the remaining indicators demonstrate reliability as presented in Table 3. Both Composite Reliability ( $\rho$ ) and Cronbach's Alpha ( $\alpha$ ) were computed to assess internal consistency, revealing values ranging from .861 to .941 and .743 to .862, respectively, comfortably exceeding the recommended threshold of .7 and thus confirming strong reliability (Nunnally & Bernstein, 1994). Following the recommendations of Hair et al. (1998), both convergent and discriminant validity were examined to evaluate construct validity. All Average Variance Extracted (AVE) values ranged from .689 to .841, surpassing the .5 benchmark, thus explaining over 50% of the variance in the indicators by the latent constructs and affirming convergent validity (Fornell & Larcker, 1981). The square roots of these AVE values are displayed diagonally in the correlation matrix of the latent variables (Table 4), and the off-diagonal correlation values fall well below these square roots, reinforcing convergent validity across all constructs (Chiu & Wang, 2008). The results also indicate a high positivity among respondents towards Perceived Behavioral Control (PBC), Attitude (AT), and Environmental Concern (EC) in relation to eco-friendly apparel. The measurement model provides ample empirical support for the reliability and validity of the constructs. However, Kock (2015) points out the importance of robustly establishing both convergent and discriminant validity.

**Table 1: Result measurement model**

Construct	Item	Scale	Loadings	AVE	$\rho_c$	$\alpha$
Environmental Concern (EC)	EC <sub>1</sub>	Reflective	.873	.726	.914	.862
	EC <sub>2</sub>		.785			
	EC <sub>3</sub>		.882			
	EC <sub>4</sub>		.867			
Attitude (AT)	AT <sub>1</sub>	Reflective	.868	.689	.869	.746
	AT <sub>2</sub>		.863			
	AT <sub>3</sub>		.755			
Subjective Norm (SN)	SN <sub>1</sub>	Reflective	.746	.707	.877	.761
	SN <sub>2</sub>		.813			
	SN <sub>3</sub>		.950			
Perceived Behavioural Control (PBC)	PBC <sub>1</sub>	Reflective	.832	.715	.910	.854
	PBC <sub>2</sub>		.854			
	PBC <sub>3</sub>		.782			
	PBC <sub>4</sub>		.915			
	PBC <sub>5</sub>		.438 <sup>a</sup>			
Perceived Moral Norm (PMN)	PMN <sub>1</sub>	Reflective	.871	.756	.861	.743
	PMN <sub>2</sub>		.868			
	PMN <sub>3</sub>		.372 <sup>a</sup>			
Perceived Consumer Effectiveness (PCE)	PEC <sub>1</sub>	Reflective	.889	.841	.941	.851
	PCE <sub>2</sub>		.873			
	PCE <sub>3</sub>		.985			
Purchase Intention (PI)	PI <sub>1</sub>	Reflective	.846	.815	.930	.848
	PI <sub>2</sub>		.884			
	PI <sub>3</sub>		.974			

Source: Author calculation <sup>a</sup>Item deleted: factor loading<0.7

**Table 2: Results descriptive and discriminant validity.**

	Mean	SD	AT	EC	PBC	PCE	PI	PMN	SN
AT	3.840	.867	.830						
EC	4.013	.921	.399	.852					
PBC	4.428	.946	.367	.461	.845				
PCE	3.321	.985	.277	.176	.355	.917			
PI	3.681	.889	.425	.062	.693	.353	.902		
PMN	3.450	.794	.343	.435	.322	.473	.529	.869	
SN	3.109	1.001	.409	.361	.452	.393	.107	.402	.840

Source: Author calculation

validity is not sufficient to overcome the common method bias and a full collinearity test is recommended. VIF values for all latent constructs were found to be below 3.3, hence eliminating the possibility for model contamination with common method bias (Kock & Lynn, 2012).

#### 4.2. Assessment of structural model

The assessment of the structural model and the results from the path analysis are depicted in Figure 2. The model's predictive power was evaluated using the R2 values, which fall within the ranges of .19, .33, and .67, representing weak, moderate, and strong effects, respectively. The relevance of the exogenous construct in predicting the endogenous construct was underscored by a Q2 statistic greater than zero (Hair Jr et al., 2014). The extended TPB model achieved a Q2 value of .271, which surpassed the original TPB model's .124, supporting the decision to include an additional construct. Non-parametric bootstrapping was used to test the significance of the path coefficients, with results shown in Table 5. The attitude (AT) towards eco-friendly clothes significantly and positively influenced the purchase intention (PI) ( $\beta = .432$ ,  $t = 8.324$ ), confirming hypothesis H1. Perceived behavioral control (PBC) and perceived moral norm (PMN) also demonstrated a higher significant positive impact on PI for eco-friendly apparel ( $\beta = .542$ ,  $t = 11.353$  and  $\beta = .501$ ,  $t = 10.144$ , respectively), leading to the acceptance of H3 and H4. The standardized regression weights ( $\beta$ )

suggest that an exogenous variable's impact on an endogenous variable should be greater than .2 in exploratory studies like this one (Higuera-Castillo et al., 2019). Conversely, the influences of subjective norm (SN) and environmental concern (EC) on PI were minimal and statistically insignificant ( $\beta = .002$ ,  $t = 1.183$  and  $\beta = -.001$ ,  $t = -.880$ , respectively), thus H2 and H9 were rejected. Perceived consumer effectiveness was confirmed as a significant positive predictor for PI ( $\beta = .246$ ,  $t = 4.634$ ), supporting H10. Additionally, EC showed significant positive impacts on AT, SN, PBC, and PMN ( $\beta = .398$ ,  $t = 6.624$ ;  $\beta = .186$ ,  $t = 2.364$ ;  $\beta = .412$ ,  $t = 7.152$ ; and  $\beta = .232$ ,  $t = 4.221$ , respectively), leading to the acceptance of H5, H6, H7, and H8. The Variance Inflation Factor (VIF) values ranged from 1.323 to 2.722, comfortably below the threshold of 5, indicating no multicollinearity issues within the structural model (J. Hair et al., 2006; Hair et al., 2011).

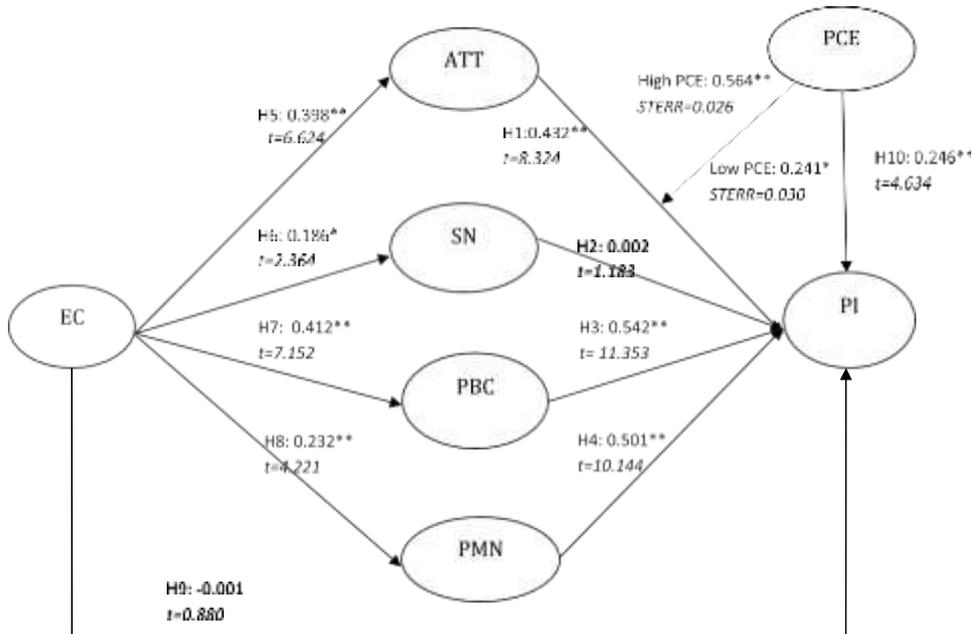


Figure 1: Structural model assessment of proposed extended TPB model

#### 4.3. Evaluating the moderating effect of perceived consumer effectiveness

Multi-group analysis (MGA) with Smart-PLS was utilized to investigate the moderating role of Perceived Consumer Effectiveness (PCE) on the relationship between attitude and purchase intention. PCE was assessed on a five-point scale, and both reliability and validity were satisfactory. Initially, the PCE data were segmented into High-PCE and Low-PCE groups by splitting at the midpoint (3) on the 1–5 Likert scale using SPSS18.0. This division resulted in two groups: high PCE ( $n = 248$ ) and low PCE ( $n = 123$ ). The Mann–Whitney U test results ( $U = 10,202$ ,  $p < .000$ ) confirm a significant difference between these groups. Secondly, MGA helped determine the model estimates (referenced in Table 6). The findings reveal that PCE significantly enhances the effect of attitude on purchase intention. While consumers generally recognize environmental issues, those who doubt the effectiveness of their contributions do not consistently show a strong inclination towards purchasing eco-friendly apparel if they have low PCE ( $\beta = .241$ ). In contrast, those confident about their impact towards sustainability (High PCE:  $\beta = .564$ ) show greater consistency in the attitude-purchase intention (AT-PI) relationship.

#### 5. Conclusion

Young people in India who are concerned about social and environmental issues are increasingly turning away from fast fashion in favor of sustainable alternatives. The expanded framework outlined in this study suggests several practical steps to achieve sustainability in fashion. Firstly, the significant influence of perceived behavioral control (PBC) on apparel purchase intentions can help marketing professionals guide consumers towards sustainable choices by emphasizing clear visibility, long-term advantages, appealing design, a wide range of options, sustainability

certification, and ease of access. Secondly, it appears that the moral obligation of youth to act ethically is becoming less dependent on social pressures. There may be a perception that pro-environmental behaviors are not socially accepted, and policymakers should engage opinion leaders to promote the benefits of organic clothing in social discussions, fostering suitable sustainable purchasing intentions. Thirdly, marketers ought to utilize effective marketing communication tools to educate consumers on the specific benefits and technological distinctions of organic apparel compared to fast fashion. Fourth, policymakers need to raise awareness about the worsening environmental conditions and encourage pro-environmental behavior through green public service announcements, organic clothing labels, socio-environmental product themes, and an affordable pricing strategy. Fifth, marketers should leverage various media platforms to demonstrate how individual-specific green actions can independently address environmental issues, potentially leading to an increase in perceived consumer effectiveness (PCE) and a corresponding shift in attitudes. The Indian government could initiate a campaign to promote environmental protection through individual efforts and encourage the adoption of green practices as a socially accepted norm.

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