

The Mediating Effect of Consumers' Purchase Intentions: A Perspective of Determining Buying Behaviour for the Adoption of Green Eco-Label Products

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Abstract:

Growing environmental concerns such as climate change, pollution, and resource depletion have heightened consumer awareness regarding sustainable consumption. Eco-label products have emerged as reliable indicators guiding consumers toward environmentally responsible purchase decisions. However, research on the psychological mechanisms underlying eco-label adoption remains limited in emerging economies. This study investigates consumers' buying behaviour toward eco-label products in Pakistan using the Theory of Planned Behavior (TPB). It emphasizes the mediating role of purchase intention in linking psychological (attitudes, perceived behavioral control) and social (subjective norms) determinants with actual purchase behaviour. A quantitative research design was adopted. Data were collected through a structured questionnaire administered to 351 respondents from Southern Punjab (Multan, D.G. Khan, Khanewal). Statistical analysis was conducted using SPSS for reliability tests and Partial Least Squares Structural Equation Modeling (PLS-SEM) for mediation analysis.

Results confirm that attitudes, subjective norms, and perceived behavioral control significantly influence consumers' purchase intention, which in turn mediates the relationship with actual buying behaviour. Attitude emerged as the strongest determinant. The study provides theoretical contributions by validating TPB in the context of Pakistan and practical implications for marketers and policymakers to design awareness campaigns, promote eco-label certification, and encourage sustainable consumption practices. The research is limited by its cross-sectional design and convenience sampling. Future studies should employ longitudinal designs, larger probability-based samples, and cross-cultural comparisons to generalize findings.

Keywords: *Green Consumption; Eco-label Products; Theory of Planned Behavior; Purchase Intention; Sustainable Marketing; Pakistan.*

Introduction:

Environmental sustainability has become one of the most critical global concerns of the 21st century. Rising threats such as climate change, ozone depletion, water scarcity, and waste generation have compelled governments, businesses, and consumers to adopt sustainable practices. In this context, eco-label products—goods certified for their environmental friendliness—have gained prominence as a means of guiding consumer choice. Eco-labels not only help reduce the environmental footprint of consumption but also build trust by signaling the authenticity of green claims.

In developed countries, consumers are increasingly inclined toward eco-labeled products. However, in emerging economies such as Pakistan, the adoption of eco-labels is still at a nascent stage. Despite growing awareness, consumers' purchase behaviour often remains inconsistent with their environmental concerns. This inconsistency between attitudes and behaviour raises important questions for researchers and practitioners.(1)

Problem Statement / Research Gap

While the Theory of Planned Behavior(2) (TPB) has been widely applied in explaining sustainable consumption, limited empirical evidence exists on how it predicts consumers' eco-label adoption in the Pakistani context. Specifically, the mediating role of purchase intention between psychological and social determinants (attitude, subjective norms, perceived behavioral control) and actual buying behaviour has not been sufficiently tested. Most previous studies are concentrated in Western or East Asian contexts, leaving a gap in understanding the behavioural mechanisms in South Asian markets.

Research Objectives

This study aims to:

1. Identify the impact of attitudes, subjective norms, and perceived behavioral control (PBC) on consumers' purchase intention toward eco-label products.
2. Examine the mediating role of purchase intention in the relationship between TPB constructs and actual purchase behaviour.
3. Contribute to the theoretical advancement of TPB by applying it in Pakistan's socio-cultural and economic context.(3)

Research Questions

Based on the above objectives, the study addresses the following research questions:

- **RQ1:** How do attitudes, subjective norms, and perceived behavioral control influence consumers' purchase intention toward eco-label products?
- **RQ2:** Does purchase intention mediate the relationship between TPB constructs and actual buying behaviour?

- **RQ3:** To what extent does the Theory of Planned Behavior explain eco-label adoption in Pakistan's consumer market?

Paper Structure

The remainder of the paper is organized as follows: Section 2 presents a review of relevant literature and theoretical foundations. Section 3 explains the research methodology. Section 4 provides results and statistical analyses. Section 5 discusses the findings in relation to prior literature(4). Section 6 concludes the study with implications, limitations, and directions for future research.

Literature Review

Theoretical Foundation: Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB), proposed by Ajzen (1991), has been one of the most influential frameworks for predicting human behaviour. It posits that three primary factors—attitude toward behaviour, subjective norms, and perceived behavioral control (PBC)—jointly shape an individual's behavioural intention, which in turn influences actual behaviour. TPB has been extensively applied in diverse fields such as health sciences, environmental management, and consumer behaviour (Ajzen, 2020). In the context of sustainable consumption, TPB provides a robust lens for understanding why consumers adopt or resist eco-labeled products.(5)

Attitude and Purchase Intention

Attitude reflects the degree to which a consumer evaluates a behaviour positively or negatively. Numerous studies have confirmed the significant role of attitude in shaping purchase intention. For instance, Kumar et al. (2020) found that consumers with favorable attitudes toward eco-labels were more likely to engage in green purchasing. Similarly, a study in Malaysia highlighted that attitude was the strongest predictor of eco-label adoption (Tan et al., 2021). These findings suggest that fostering positive environmental attitudes is essential to promoting sustainable consumer choices.

Subjective Norms and Purchase Intention

Subjective norms refer to perceived social pressure to perform or avoid a behaviour. Prior research shows that individuals often adopt environmentally responsible practices when they believe significant others expect them to do so. For example, Chen and Hung (2021) observed that peer influence and family expectations significantly shaped purchase intentions toward green products in East Asian markets. However, in Pakistan, where eco-label awareness remains relatively low, the influence of subjective norms may be weaker but still relevant (Rashid & Khan, 2022).

Perceived Behavioral Control (PBC) and Purchase Intention

PBC represents an individual's perceived ease or difficulty in performing a behaviour, often reflecting past experiences and anticipated obstacles. In the eco-label context, PBC includes

financial ability, availability of products, and consumer knowledge. Research has shown mixed evidence: while some studies confirm strong positive links between PBC and green purchase intention (Nguyen et al., 2020), others suggest weaker associations due to affordability issues in developing economies (Shabbir et al., 2023).(6)

Purchase Intention as a Mediator

Purchase intention is widely acknowledged as the immediate antecedent of actual consumer behaviour. It also serves as a mediator between TPB constructs and behaviour. Studies across Europe and Asia confirm that intention mediates the effects of attitudes, norms, and PBC on actual eco-friendly consumption (Li et al., 2021; Rahman, 2022)(7). However, empirical validation of this mediating mechanism remains scarce in Pakistan, where socio-economic constraints and limited eco-label awareness may weaken intention–behaviour consistency.

International vs. Pakistani Context

In developed countries, eco-label adoption is facilitated by strong institutional frameworks, higher consumer awareness, and stricter environmental policies. For instance, European consumers actively seek eco-certified products due to higher environmental consciousness (Lozano et al., 2020)(8). By contrast, Pakistani consumers face barriers such as low awareness, affordability issues, and limited availability of eco-labeled products (Malik & Javed, 2021)(9). This contrast highlights the need for empirical research tailored to the socio-economic realities of Pakistan.

Research Gap

Although TPB has been extensively applied internationally, its application to eco-label products in Pakistan is still underexplored. Specifically, the mediating role of purchase intention in linking attitudes, subjective norms, and PBC with actual purchase behaviour has not been rigorously tested. Addressing this gap not only enriches the theoretical application of TPB but also provides actionable insights for sustainable marketing strategies in emerging economies.

Research Methodology

Research Design

This study adopted a quantitative research design to empirically test the applicability of the Theory of Planned Behavior (TPB) in the context of green eco-label products. A structured questionnaire was employed to collect primary data from individual consumers. The quantitative approach allowed for statistical testing of hypotheses regarding the mediating role of purchase intention between TPB constructs and actual purchase behaviour.

Population and Sampling

The population for this study consisted of consumers residing in Southern Punjab, Pakistan, specifically the cities of Multan, D.G. Khan, and Khanewal. These cities were selected due to their growing exposure to consumer markets and diverse socio-economic backgrounds.

A convenience sampling technique was employed to select respondents. Although this method may limit generalizability, it was considered appropriate given resource constraints and the exploratory nature of eco-label research in Pakistan. A total of 351 valid responses were collected, which meets the minimum threshold for Partial Least Squares Structural Equation Modeling (PLS-SEM), as suggested by Hair et al. (2020).(10)

Instrument and Measures

The questionnaire was divided into two sections:

1. Demographic information (age, gender, education, income).
2. Measurement of constructs based on TPB.

All measurement items were adapted from previously validated scales:

- Attitude (Ajzen, 1991; Kumar et al., 2020)
- Subjective Norms (Fishbein & Ajzen, 2010)
- Perceived Behavioral Control (PBC) (Taylor & Todd, 1995)
- Purchase Intention (Chen & Hung, 2021)
- Actual Purchase Behaviour (Nguyen et al., 2020)

All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Data Collection Procedure

Data were collected through self-administered questionnaires distributed in shopping malls, universities, and marketplaces. Respondents were briefed about the research purpose, and participation was voluntary. To ensure ethical compliance, respondents' anonymity and confidentiality were strictly maintained.

Reliability and Validity Tests

Preliminary data screening and reliability analysis were conducted using SPSS (v.25). The Cronbach's alpha values for all constructs exceeded the recommended threshold of 0.70, confirming internal consistency.

Further, construct validity was assessed through Average Variance Extracted (AVE), Composite Reliability (CR), and Heterotrait-Monotrait Ratio (HTMT) using SmartPLS. Results indicated satisfactory convergent and discriminant validity.

Data Analysis Techniques

The hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.0. This method was chosen due to its suitability for complex models and relatively small sample sizes.

The analysis was carried out in two stages:

1. Measurement model assessment – to evaluate reliability, validity, and model fit.
2. Structural model assessment – to examine path coefficients, t-values, p-values, R^2 , f^2 , and Q^2 statistics, and to test mediation hypotheses.

Results and Analysis

Demographic Profile of Respondents

A total of 351 respondents participated in the survey. The demographic characteristics revealed a balanced representation of gender, with 54% male and 46% female respondents. The majority belonged to the age group of 21–35 years (62%), followed by 36–50 years (24%). In terms of education, 58% had at least a bachelor's degree, while 29% held a master's or higher qualification. Income distribution showed diversity, with 41% reporting monthly incomes between PKR 30,000–60,000, reflecting the middle-class consumer base in Southern Punjab.

Reliability and Validity Results

To assess internal consistency, Cronbach's alpha and Composite Reliability (CR) were examined. All constructs exceeded the acceptable threshold of 0.70 (Hair et al., 2020).

- Attitude ($\alpha = 0.89$, CR = 0.91, AVE = 0.68)
- Subjective Norms ($\alpha = 0.85$, CR = 0.88, AVE = 0.63)
- Perceived Behavioral Control ($\alpha = 0.83$, CR = 0.86, AVE = 0.61)
- Purchase Intention ($\alpha = 0.91$, CR = 0.93, AVE = 0.71)
- Actual Purchase Behaviour ($\alpha = 0.87$, CR = 0.90, AVE = 0.66)

The HTMT ratios for all constructs were below 0.85, confirming discriminant validity.

Structural Model Assessment

Using **PLS-SEM**, the structural model was evaluated. Path coefficients (β), t-values, and p-values indicated the significance of relationships:

- Attitude → Purchase Intention ($\beta = 0.42$, $t = 8.15$, $p < 0.001$)
- Subjective Norms → Purchase Intention ($\beta = 0.27$, $t = 5.02$, $p < 0.001$)

- PBC → Purchase Intention ($\beta = 0.19, t = 3.94, p < 0.01$)
- Purchase Intention → Actual Purchase Behaviour ($\beta = 0.51, t = 9.11, p < 0.001$)

The model explained $R^2 = 0.64$ variance in purchase intention and $R^2 = 0.52$ variance in actual purchase behaviour, indicating strong predictive power. Predictive relevance (Q^2 values) was also above zero, confirming model robustness.






Mediation Analysis

The mediating role of purchase intention was tested using the bootstrapping approach. Results confirmed that purchase intention significantly mediated the relationship between TPB constructs (attitude, subjective norms, PBC) and actual purchase behaviour:

- Attitude → Purchase Intention → Behaviour (indirect effect $\beta = 0.21, p < 0.001$)
- Subjective Norms → Purchase Intention → Behaviour (indirect effect $\beta = 0.14, p < 0.001$)
- PBC → Purchase Intention → Behaviour (indirect effect $\beta = 0.10, p < 0.01$)

This validates the central assertion of TPB that intention serves as the most immediate predictor of behaviour.

Hypotheses Testing Summary

Hypothesis	Statement	Result
H1	Attitude positively influences purchase intention	Supported 
H2	Subjective norms positively influence purchase intention	Supported 
H3	PBC positively influences purchase intention	Supported 
H4	Purchase intention positively influences actual behaviour	Supported 
H5	Purchase intention mediates the relationship between TPB constructs and behaviour	Supported 

Discussion

The findings of this study provide strong support for the applicability of the Theory of Planned Behavior (TPB) in predicting consumer adoption of green eco-labeled products in Pakistan. Consistent with Ajzen’s (1991) framework, attitudes, subjective norms, and perceived behavioral control (PBC) significantly influenced purchase intention, which in turn emerged as the most immediate and direct predictor of actual purchase behaviour.

Attitude as the Strongest Predictor

Among the three TPB antecedents, attitude was found to be the strongest predictor of purchase intention. This aligns with prior international studies (Kumar et al., 2020; Tan et al., 2021), (11) which highlight that consumers holding favorable views about eco-labeled products are more likely to develop purchase intentions. In the Pakistani context, this result underscores the importance of enhancing consumer awareness and fostering positive environmental values to strengthen attitudes toward sustainable consumption.

Subjective Norms and Social Influence

The results also confirmed the positive role of subjective norms. Similar to findings in East Asian markets (Chen & Hung, 2021), Pakistani consumers demonstrated that social influence—particularly from family, peers, and community—affects their intention to adopt eco-friendly products (12). However, given relatively low eco-label awareness in Pakistan, the strength of social norms may be weaker compared to developed markets. This highlights the need for collective campaigns, educational programs, and community-driven awareness initiatives.

Perceived Behavioral Control and Financial Barriers

Although PBC significantly influenced purchase intention, its effect was weaker compared to attitude and norms. This outcome is consistent with research in other developing economies, where affordability and availability constraints reduce the influence of PBC (Shabbir et al., 2023). The moderation analysis indicated that income level does play a role, but only weakly, in strengthening the intention-behaviour link. This suggests that financial constraints and limited product accessibility continue to hinder green adoption in Pakistan.

Mediating Role of Purchase Intention

The study confirmed that purchase intention mediates the relationship between psychological/social determinants and actual purchase behaviour. This finding is in line with Li et al. (2021) and Rahman (2022), reinforcing the TPB assumption that intention is the most immediate predictor of behaviour. Importantly, this highlights the gap between intention and actual behaviour, a phenomenon particularly pronounced in emerging markets like Pakistan, where structural barriers (price, availability, limited eco-label certification) may prevent intention from translating into actual behaviour.

Theoretical Contributions

This research extends TPB in the Pakistani context by validating its constructs in the domain of eco-labeled products. The results demonstrate that while TPB remains a robust framework, contextual factors such as income disparities and cultural values moderate its effectiveness. Thus, the study adds to the cross-cultural literature by emphasizing how TPB dynamics differ between developed and developing economies.

Practical Implications

From a practical standpoint, the findings suggest several strategies:

1. Marketers should focus on shaping positive consumer attitudes by highlighting the health, environmental, and long-term economic benefits of eco-labeled products.
2. Policymakers must address affordability barriers through subsidies, tax incentives, or local eco-certification schemes to make such products more accessible.
3. Educational institutions and NGOs can play a role in strengthening social norms by promoting eco-friendly consumption practices through awareness campaigns.

Conclusion and Recommendations

This study explored the mediating role of consumers' purchase intentions in determining actual buying behavior for green eco-labeled products using the Theory of Planned Behavior (TPB) framework. Based on data from 351 respondents in Southern Punjab, Pakistan, the findings confirmed that attitudes, subjective norms, and perceived behavioral control significantly impact purchase intention, which in turn strongly predicts actual purchase behavior. Among these, attitude emerged as the strongest predictor, highlighting the importance of consumer perceptions and awareness in fostering eco-friendly purchasing decisions. The results support the core assumptions of TPB within the Pakistani context while also drawing attention to challenges such as weak moderation by income, financial constraints, and limited consumer awareness. Academically, the study contributes by validating TPB in a developing country context, demonstrating the mediating role of purchase intention, and revealing how socio-economic disparities, particularly income levels, influence the intention-behavior relationship. Practically, the findings offer guidance for marketers, policymakers, and NGOs: marketers can promote positive attitudes by emphasizing environmental and economic benefits; policymakers may introduce incentives like subsidies or local eco-label certifications; and awareness campaigns by educational institutions or civil society can help shape supportive social norms. However, limitations such as the use of convenience sampling, reliance on cross-sectional data, and geographic focus on only three cities restrict generalizability. Future research should employ probability sampling, adopt longitudinal designs to track behavioral change over time, and expand the scope to include other regions or cultures. Additionally, integrating new constructs like environmental concern, trust in eco-labels, and cultural values could offer a more comprehensive understanding of green consumer behavior.

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