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Behavioral Insights into Eco-Conscious Consumers

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Abstract

The research focuses on what influences individuals to choose eco-conscious options when they are shopping. Using the survey feedback from 400 people, the research explores trust in eco-labels, environmental concern, how often they shop, how sensitive they are to prices, and what their digital literacy is like. Data analysis employed SPSS, making use of Exploratory Factor Analysis (EFA), testing the reliability of the scales, performing multiple regression, ANOVA, mediation, and moderation analyses, and implementing cluster segmentation. Apparently, trust in eco-labels, caring about the environment, and being digitally literate have a strong impact on pro-environmental behavior, whereas income and price sensitivity have less effect. Behavioural segmentation revealed three groups of buyers, showing that their trust, price feelings, and level of digital involvement differ greatly in their attitude toward sustainable products. It has been shown that, in spite of strong trust, certain consumers cannot buy because of cost or a lack of digital familiarity. By segmentation, it becomes easier to craft targeted strategies to encourage eco-friendly patterns of buying and spending. In this research, psychological, economic, and digital factors are combined in one framework to learn more about how modern consumers respond to eco-conscious options. Both the research outcomes and the suggestions provide ideas and solutions for businesses, policy makers, and leading sustainability advocates who aim to motivate people to become greener consumers.

Keywords: Consumer Segmentation, Digital Literacy, Eco-Conscious Behaviour, Environmental Concern, Sustainable Consumption, Trust in Eco-Labels.

Introduction

The rate of environmental deterioration, climate change, and unsustainable use of resources has quickly raised the importance of the role of individual and collective consumption behavior. In today's world, global economies are trying to attain sustainability, to which the consumers are partners in ensuring this transformation by making green purchases (1, 2). Of these, one that has achieved particularly noteworthy scholarly and practical attention is so called eco conscious purchasing behavior, which refers to explicitly purchasing products and services that have lesser negative impact on the environment (3, 4). Despite broadening environmental awareness, consumers continue to carry that gap of intent versus the actual purchase behavior, a common term for the attitude - behavior gap for environmental conservation (5, 6). There are many psychological and economic factors that explain this disconnect, such as the level of trust in the eco label, price sensitivity, and degree of concern of consumers about environmental issues (7, 8). In the current digital world, digital literacy is becoming an important enabler both as a facilitator that empowers consumers to access and evaluate information related to sustainability, and to act upon it (9, 10). While such factors are known, research into their interaction and relative importance has been limited in an integrated framework. The previous studies have mainly concentrated on the isolated predictors of the problem utilizing the approaches that give beneficial information, not taking into consideration holistically the resolved analytical approach which explains the complexity of the real decision making process (11-14). Only little effort has been made to differentiate between different sorts of eco conscious consumers via behavioral segmentation. By overlooking this, the uniqueness of consumer profiles is reduced to the general, and suitable insights are not offered to marketers, policymakers, nor sustainability advocates (15,16). To understand the eco-conscious purchasing behaviour, a multidisciplinary approach has to be adopted such that it encompasses the environmental psychology, the

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consumer behavior, the behavioral economics and the digital engagement. The next part of this section discusses relevant literature with respect to five core constructs used within the present study, namely, trust in eco-labels, shopping frequency, price sensitivity, environmental concern, and digital literacy. In this subject, it also reveals the gaps in the integration of these constructs in the discipline of sustainability research and the part played by behavioral segmentation (17-19).

Trust in Eco-Labels

Eco labels are informational tools which are being used to guide the consumers towards environment friendly choices by showing the sustainability credential of the product. Several studies of theirs have reported that consumer trust in such labels notably impacts their likelihood of purchase (20, 21). In addition to enhancing the faith in validity of environmental claims, trust reduces the information processing effort necessary to verify sustainability information. Unfortunately, many unregulated labels, greenwashing or lack of consumer knowledge often undermine trust. As a result, trust in eco-labels serves as a key psychological facilitator of eco-conscious behavior, and behavioural change in green markets must rely upon it (22, 23).

Shopping Frequency

Consumer behavior shopping frequency is a habitual behavior pattern of consumers, which has implications on sustainability. Product alternatives are seen more frequently, and eco-labeled items are encountered more often in their career as frequent shoppers, making eco-conscious choice more probable (24). Impulsive or convenience-based decision making in the context of frequent shopping cannot be identified with the sustainable values. Therefore, shopping frequency assumes two functions: First, an opportunity for green engagement and second, a possible limiting factor of sustainable reflection (25).

Price Sensitivity

One of the most well cited barriers to sustainable purchasing is Price. Many studies show that green products are habitually perceived as carrying a higher price which is in opposition with conservation value and economic constraint (26). High price-sensitive consumers tend to avoid purchasing eco—labeled products when price premium is high or environmental benefit is perceived to be inaccessible. Nevertheless, studies currently suggest that this barrier is dying away, particularly to increasingly environmental savvy and younger demographics (27).

Environmental Concern

Environmental concern is defined as the degree to which an individual is aware of the issues and is motivated to do something about it in terms of environmental issues. It has been found as a strong predictor of green attitudes and to some extent of green behaviours (28). The theory of planned behavior and the value-belief-norm theory both posit environmental concern as a key antecedent of behavioral intention. But researchers repeatedly point to a gap between concern and action and highlight the mediating and moderating factors between concern and action like social norms, product availability, and perceived effectiveness of consumers (29).

Digital Literacy

As digital platforms broadcast sustainability information, having good digital literacy is becoming progressively important in decision making with regard to sustainability. Consumers expect to find out product sustainability from websites, social media, mobile apps, and QR codes (30). Digital literacy improves the capacity to access, evaluate, and do something with environmental information. Having said this, only a small number of empirical tests have been conducted to measure digital literacy as a decisive factor in sustainable behavior, which is a noticeable room for this research (31).

Integrating Constructs and the Role of Behavioral Segmentation

These individual factors have been well studied, but are few incorporated into a single analytical model. For the most part, they concentrate on bivariate relationships or studying one construct apart from the others (32). Also, much of the literature considers consumers as a homogeneous group that ignores the behavioral heterogeneity reality found in real markets. Although we haven't utilized cluster analysis and behavioral segmentation methods, there are ways to break up consumer profiles into the varied segments such as "green champions" and "price sensitive pragmatists". Trusting consumers, those who buy frequently and those who are sensitive to price could be segmented and will assist practitioners to design marketing strategies, product offerings and

educational campaigns in a more effective manner (33-35).

Summary and Research Direction

It has been proved by the literature that trust, frequency, price, concern and digital awareness have a significant bearing on eco-conscious consumer behavior. It is still necessary to examine these factors in parallel and understand the resultant interaction that might involve such variables serving as mediating or moderating factors. Yet, empirical studies that use robust statistical methods such as factor analysis, regression modeling, cluster segmentation to prove these constructs and emerging actionable profiles are still limited. This present study commenced to fill in the gaps by building a multifactorial framework using the SPSS based statistical techniques that explores the key predictors of eco consciousness behaviour, their relationships and the segments of behavioural patterns within the consumer base. The advantage of this integrated approach is that it advances theory and creates implications for practice of sustainability focused consumer engagement.

This study addresses the research gaps buy creating and implements a multi-dimensional analytical framework to investigate the critical criteria that affect the eco-conscious purchasing behavior. Based on a structured dataset of 400 survey respondents the research is performed on those psychological constructs (trust and concern), behavioral patterns (shopping frequency) and economic considerations (price sensitivity) as factors related to grocery shopping. Digital literacy is also included in the study as a modern variable such as the increasing significance of online sustainability information. SPSS software is used to analyze the data using combination of statistical methods. Among others, Exploratory Factor Analysis (EFA) was conducted to uncover latent constructs, reliability testing through Cronbach's Alpha, multiple regression analysis to determine predictor significance, ANOVA and post hoc tests to identify demographic differences, and mediation and moderation analysis to check indirect and conditional effects. Finally, cluster analysis is performed to create groups of consumers who differed behaviourally from each other in buying behaviour and values.

The study aims to contribute to the better understanding of what makes up in sustainable consumptions by using a comprehensive approach that leveraging both psychological, digital, and economic cues and exploring how different consumer segments respond to these cues in their path toward eco conscious decision making. The paper is organized as follows: section 2 presents a brief review of the literature on eco-conscious consumer behavior and summarizes similar theoretical and empirical work found in the literature. The design, data collection process and analytical techniques in the study are presented in Section 3. In Section 4, statistical results and visual insights are presented because of analysis. The implications of the findings are interpreted in the light of existing theories that have a bearing in Section 5. Section 6 concludes the paper with a summary of the contributions as well as research and practice recommendations.

Methodology

The methodology section outlines the research design, data collection procedures, and statistical techniques employed to examine the factors influencing eco-conscious consumer behavior. A structured survey was administered to 400 participants, and the data were analyzed using SPSS to perform exploratory factor analysis, reliability testing, regression modeling, and cluster-based segmentation.

Research Design

The method used for this research was based on quantitative research approach which is used to systematically analyse the factors that influence eco conscious purchasing behaviour. Since structured survey methodology worked well in capturing large scale consumer response and in standardizing data collection, this methodology was selected. The survey contains validated Likert-scale items that gauge out key constructs such as trust in eco-labels, shopping frequency, price sensitivity and digital literacy. The major purpose of this research is to develop and evaluate a complete framework that describes the ways in which consumer trust, environmental concern, and digital awareness impact eco-responsible purchasing decisions. The proposed model extends existing traditional models by adding new mathematical equations to measure trends in behaviours dynamically. The research combines exploratory factor analysis (EFA), multiple regression, mediation/moderation analysis and

cluster analysis using SPSS to achieve the statistical rigor. This is based on the causal relationships as between consumer trust and shopping behavior, price sensitivity, eco consciousness purchasing. Digital literacy and environmental concern are incorporated as moderating factors in a new decision function. In so doing, this approach offers eco-conscious consumer segmentation in a data driven and predictive model. A model depicting the framework is shown in the diagram below; this is based on the relationships between key variables and analytical techniques used to validate the framework.

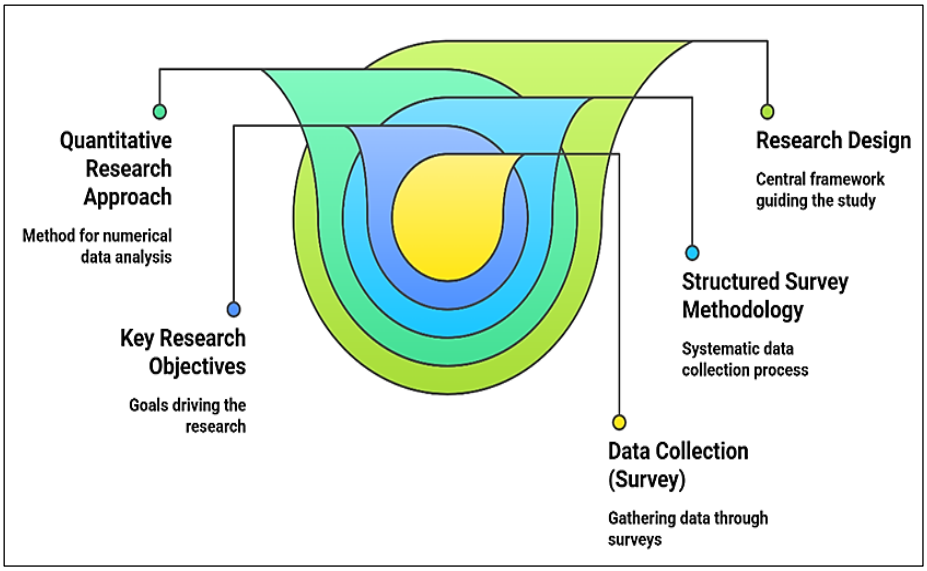

Figure 1: Research Design

An illustration of the research design is presented in Figure 1 diagram indicating interdependence of methodology, variables, and techniques of analysis, for instance in case of quantitative research. New mathematical models for distinct types of eco-conscious consumers in the marketplace are integrated with consumer segmentation strategies, ensuring that the study provides a new theoretical and empirical contribution to eco-conscious consumer behavior research.

Data Collection and Sampling

The data collection method based on a structured survey is carried out to investigate the determinants of the eco-conscious purchasing behaviour. The items used to measure the constructs were adapted from established, validated scales in previous literature like: The Trust in Eco-Labels scale was adapted (20); Digital Literacy (31); Environmental Concern (28); Minor modifications were made to suit the local context and clarity of interpretation. All items were measured on a 5-point Likert scale as the survey was designed to capture the quantitative responses of a statistically representative sample of a set of diverse consumers, the desired information could be analyzed statistically. The multiple sections of the questionnaire are aimed at collecting data on important constructs including trust in eco-labels, shopping frequency, price sensitivity, environmental concern, and digital literacy. Responses were ensured for consistency and comparison by using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Target Population and Sample Size Determination

The consumer group forms part of the consumer target population because they are consumers that have the tendency of making purchase decisions influenced by sustainability concerns. The study also utilizes Cochran's formula to calculate the necessary number of responses for a survey-based study to determine an appropriate sample size.

$$n_0 = \frac{Z^2 p(1-p)}{e^2} \qquad [1]$$

where:

- n_0 = Required sample size
- $Z = Z$-score corresponding to confidence level (1.96 for 95% confidence)
- p = Estimated proportion of the population selecting an eco-conscious response (assumed 0.5 for maximum variability)
- e = Margin of error (set at 5%, or 0.05)

Substituting values:

$$n_0 = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 400$$

To account for potential non-responses and missing data, a total of 401 valid responses were collected, ensuring statistical power for hypothesis testing.

Sampling Technique

The participants involved were chosen using a purposive non-probability sampling approach involving those who have previous exposure to eco labelling and sustainable purchasing decisions. Probability sampling allows generalization to the wider population, while non-probability sampling (used here) targets relevant respondents but limits generalizability. The respondents are ensured to have enough knowledge about what they are being asked. Stratification was done according to the demographic factors so that it represented:

- Income groups (low, middle, high)
- Educational backgrounds (secondary, undergraduate, postgraduate)
- Low, medium, and high levels of digital literacy.

The demographics data of each of the participants were collected to study how income, education and awareness affect eco conscious purchase behaviour.

Data Collection Procedure

The survey was a Google Form and the survey was distributed online through social media to consumers who purchase the eco-labeled food and home products. To decrease response bias, questionnaire was carried out with a small group (n = 30) to ensure clarity, relevance, and validity. Data Collection and Processing Timeline:

- Week 1: Survey pre-testing and refinement.
- Weeks 4-8: Full-scale data collection through digital distribution, in urban area.
- Week 10: Data cleaning, removal of incomplete responses, and preparation for statistical analysis.

Data Validity and Reliability Measures

A series of statistical checks were applied to ensure that the data collected were accurate and consistent, and were reliable. These measures assist to create credibility of the produced constructs and weigh the fact that the survey things accurately measure the conceptualized theoretical constructs. Two prime validity and reliability assessments performed are construct validity (using Exploratory Factor Analysis (EFA)) and internal consistency reliability (using Cronbach's Alpha).

If the latent structure of the measured variables is confirmed, Exploratory Factor Analysis (EFA) is used for construct validity. To see whether the dataset was appropriate for factor analysis, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity are presented in Table 1.

- Kaiser Meyer Olkin (KMO) Test: A test to determine how many the variables in the dataset are related with each other. The appropriate value for KMO is above 0.60 which means that the data is suitable to be used for factor analysis.
- Factor analysis is meaningful, if the variables are sufficiently correlated as measured by Bartlett's Test of Sphericity. A p-value < 0.05 indicates using the factor analysis.

Table 1: KMO and Bartlett's Test

Measure	Value	Interpretation
Kaiser-Meyer-Olkin (KMO)	0.812	Data is highly suitable for factor analysis
Bartlett's Test (Chi-Square)	965.28	Significant correlation between variables (p < 0.001)

The high KMO value (0.812) and the significant Bartlett's Test confirm that factor analysis is appropriate for identifying latent constructs.

Internal Consistency Reliability

Cronbach's Alpha (α) was calculated so as to assess the reliability of multi-item scales for each construct. Internal consistency is indicated by this statistic, testing how well related is a group of items. Cronbach's Alpha (α) formula is:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum \sigma_X^2}{\sigma_T^2}\right) \qquad [2]$$

Where:

- k = Number of items in the scale
- σ_X^2 = Variance of each individual item
- σ_T^2 = Total variance of all items combined

Good internal consistency is consistent with a Cronbach's alpha value above 0.75. The Cronbach's Alpha values computed for each construct are also summarized in Table 2.

Table 2: Cronbach's Alpha for Reliability Testing

Construct	Number of Items	Cronbach's Alpha (α)	Reliability Interpretation
Trust in Eco-Labels	4	0.89	Excellent
Shopping Frequency	3	0.78	Good
Price Sensitivity	3	0.74	Acceptable
Eco-Conscious Purchasing	5	0.85	Excellent
Digital Literacy	4	0.81	Good

The values of Chronbach's alpha are higher than this mark, which indicate the high reliability of the scales. All but two constructs, (Trust in Eco-Labels (0.89) and Eco-Conscious Purchasing Behavior (0.85)) are found to be quite reliable based on acceptable (>= 0.6) but less than good (>= 0.7) reliability.

Operational Definitions of Key Variables

The Figure 2 depicts visually the interrelationships of key variables that affect eco consciousness purchasing behaviour. Consequently, trust in eco-labels, shopping frequency, price sensitivity, digital literacy and environmental concern are brought into the model as variables that can help define consumer decisions on making sustainable production choices. In this study, eco-consciousness was defined using self-reported attitudes and behaviors toward sustainability, including trust in eco-labels, environmental concern, and purchasing frequency. Respondents were behaviourally profiled through survey responses and segmented using cluster analysis.

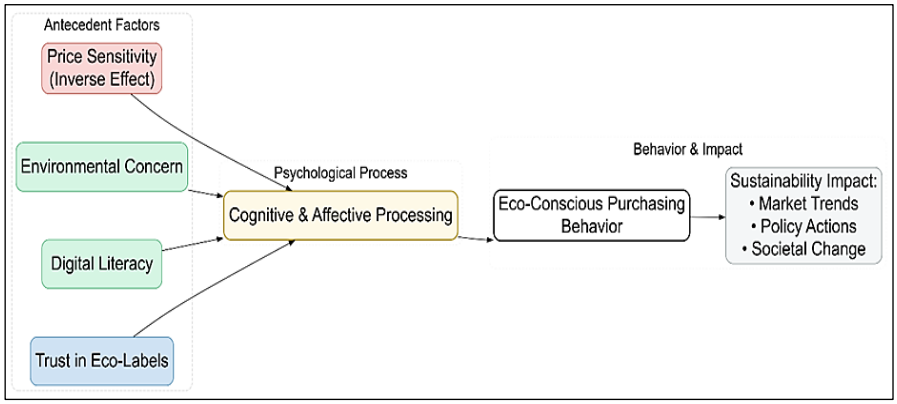

Figure 2: Conceptual Framework

Trust in Eco-Labels and Eco-Conscious Purchasing Behavior: The direct role of trust in eco labels in consumer decisions is established. Ecological products embrace the benefits of eco labelling, and when the consumers can understand and believe in the eco labelling, it becomes motivating factor for the consumers to prefer the eco labelled product over the conventional ones. Third party certifications, transparent labeling practices and previous positive dealings with eco-friendly brands helps form trust.

Shopping Frequency as a Driving Factor: Eco labled products and/or sustainable purchasing behavior are observed by the consumers who are likely to shop often. More exposure to eco labels in shops will serve to heighten awareness and the recognition, leading to greater chances of shoppers selecting sustainable products. Also, they interact more often with the digital tools, which help them know more about eco-friendly choices.

Price Sensitivity's Negative Impact on Eco-Conscious Purchasing: The biggest barrier to eco conscious purchases is price sensitivity. While eco-labeled products make consumers more likely to prioritize sustainability rather than affordability, many consumers tend to perceive such products as more expensive, so they unlikely to make sustainability their priority over affordability. According to the diagram, price sensitivity has a negative connection to eco conscious purchasing and as price sensitivity goes up, eco conscious purchasing goes down (red indicates negative impact). To deal with this problem, ways such as government subsidies, discount strategy, marketing, and consumer education can be

implemented to decrease the feeling of reluctance of sustainable shopping due to its high price.

Digital Literacy as a Facilitator: Influence on shopping frequency and eco-conscious purchasing behavior of an individual is greatly dependent on their digital literacy. Eco-label information is more accessible to consumers who are comfortable with using digital tools such as QR codes and mobile applications as well as online databases. This gives them the ability to check the product claims, compare the alternative products, and make sound judgments. It has an indirect effect on trust in eco-labels and diminishes scepticism about green washing endeavours.

Environmental Concern as a Motivator: Pure individualism is prevalent in the United States, and not surprisingly, the most environmentally conscientious consumers are more likely to adopt sustainable consumer behaviors. This variable indicates a consumer's personal values, awareness of global environmental situations and their intentions to open their ecological footprint. A direct link between concern about the environment and buying environmentally is highlighted in the diagram which suggests that high awareness of the environment makes one shop sustainably.

Integrated Impact on Eco-Conscious Purchasing Behaviour: These variables combined with each other determine the consumer's likelihood of engaging in sustainable purchasing behavior. Eco conscious purchases are positively influenced by trust to purchase in online shopping, shopping frequency, digital literacy and a barrier is price sensitivity. Sustainable choices are reinforced further still by an environmental concern.

A diagram of eco-conscious consumer behavior whose dynamics as a blueprint of the same is understood. It illustrates how several factors interact through which information will be useful for the marketers, policy makers and researchers who are related with promoting the sustainable consumption.

Novel Mathematical Models for Eco-Conscious Purchasing Behavior

In this study, traditional statistical models are combined with new characterization models to increase the predictive power of the traditional statistical models and also to understand the eco conscious purchasing behavior more holistically. Conventional regression approaches, however, are limited in this way and these models introduce new nonlinear transformations, weighted effects, and dynamic adaptions to these models, allowing these models to be better representative of the decision-making process of a consumer in the real world. An innovative approach amongst such approaches is the Trust Adjusted Purchasing Probability Model which utilizes a logistic transformation to estimate the probability of a stakeholder to engage in the eco conscious purchasing Behavior. Models such as this one proved particularly helpful as they can capture gradual rise in probability as influencing factors such as trust in eco label, shopping frequency and digital literacy are increasing while simultaneously absorbing negative impact of price sensitivity.

Trust-Adjusted Purchasing Probability Model: The consumer's purchasing decision, especially when it comes to the eco labeled product, is rarely linear. In traditional regression models, it is assumed that the change rate is fixed, so that any unit increase of trust or shopping frequency will give corresponding increase to the eco conscious purchasing behavior (ECPB). In reality, however, consumer decision making is a more nonlinear process – consumer trust or digital literacy increases slightly at the beginning, and it has no impact on decision making yet, until the level reaches at a certain threshold point, then, the probability of choosing an eco-product goes up steeply. In order to model this nonlinear probability shift, we propose a logistic transformation model that returns a more realistic estimation of consumer behavior by restricting the probability values to be between 0 and 1. The transformation allows the model to predict will not predict negative probabilities or values larger than 100%, which is unrealistic in consumer behavior.

The probability of a consumer engaging in eco-conscious purchasing behavior ($P(ECPB)$) is given by the following logistic function:

$$P(ECPB) = \frac{1}{1+e^{-(\beta_0+\beta_1 T+\beta_2 S-\beta_3 P+\beta_4 D)}} \quad [3]$$

Where:

$P(ECPB) =$ Probability of engaging in eco-conscious purchasing behavior

$T =$ Trust in Eco-Labels

$S =$ Shopping Frequency

$P =$ Price Sensitivity (negative impact)

$D =$ Digital Literacy

$\beta_0 =$ Intercept (baseline likelihood of eco-conscious behavior when all factors are zero)
$\beta_1, \beta_2, \beta_3, \beta_4 =$ Regression coefficients representing the weight of each predictor
This equation follows the standard logistic function, which is widely used in behavioral prediction models. The exponential transformation in the denominator ensures that the probability remains within the 0-1 range, making it statistically robust and interpretable.
A logistic transformation is introduced to the Trust-Adjusted Purchasing Probability Model which becomes a significant improvement over traditional regression approaches to better reflect the nonlinear behavior patterns of consumers. This model guarantees that the probability of eco-conscious purchasing stays realistic, bounded, and understandable, consequently getting it a helpful instrument for natural resarch and strategic utilization of shopper.

Dynamic Consumer Adaptation Model: Behavior will pass over time as consumer learns from new knowledge, experiences and other external influences that are gradually enlightening their decision-making process in purchase of multiple products. The Dynamic Consumer Adaptation Model introduces a time sensitive way of looking at eco conscious purchasing behavior that factors past behaviors into future decision making. However, bought decisions are determined implicitly and the actual process is not independent, because past experiences with eco labeled products, trust in labels and price perceptions affect the future choices. Those who tend to buy eco-friendly products in the regular course of business are more likely to continue buying them, whereas the former might scale down their engagement if they face price barrier or negative experience.
The model is represented by the following equation:

$$ECPB_t = \phi ECPB_{t-1} + \lambda(T + S - P + D) + \epsilon_t \quad [4]$$

where:

$ECPB_t =$ Eco-Conscious Purchasing Behavior at time t
$ECPB_{t-1} =$ Eco-Conscious Purchasing Behavior at the previous time period $(t-1)$
$\phi =$ Behavioral Consistency Factor $(0 < \phi < 1)$, capturing the influence of past behavior
$\lambda =$ Learning Rate (rate at which new influences impact behavior)
$T =$ Trust in Eco-Labels
$S =$ Shopping Frequency
$P =$ Price Sensitivity (negative impact)
$D =$ Digital Literacy
$\epsilon_t =$ Error term capturing random influences at time t

This equation captures how consumer behavior adapts over time by blending habitual purchasing patterns ($\phi ECPB_{t-1}$) with external factors ($\lambda(T + S - P + D)$).
If ϕ is close to 1, past behavior strongly influences future decisions, meaning consumers tend to repeat their purchasing habits. If λ is high, new influences such as trust, digital literacy, and shopping frequency rapidly reshape behavior.
The Dynamic Consumer Adaptation Model is a realistic, time sensitive model connecting the habitual behavior to new influences that govern the evolution of eco conscious purchasing decisions. A powerful tracking tool for consumer shift, this is useful to policy design, marketing, and long-term sustainability research.

Price Sensitivity Elasticity Model: To estimate the degree to which consumers respond to changes in the prices of eco-labeled products, the Price Sensitivity Elasticity Model is developed. It is concept based with price elasticity of demand and specific to the scenario of eco-conscious purchasing behavior. This model helps measure how sensitive consumers are to changes in price when choosing between buying sustainable products or not. The formula for the elasticity is:

$$E = \frac{\%\Delta ECPB}{\%\Delta P} \quad [5]$$

Where:

- E represents the price sensitivity elasticity,
- $\% \triangle ECPB$ is the percentage change in Eco-Conscious Purchasing Behavior,
- $\%\Delta P$ is the percentage change in price of eco-labeled products.

This equation gives the responsiveness of purchasing behavior to price changes. The fact that the value of E is negative implies that an increase in the price leads to a decrease in the purchasing of eco conscious goods, in accordance with standard consumer behavior. On the contrary, if the absolute value of the elasticity is low, it would indicate that consumers tend to be price inelastic, meaning that price changes do not fundamentally change their decisions of sustainable consumption.

By considering this elasticity metric, the model can offer researchers and policymakers a better understanding of how pricing modifies ecofriendly consumption and also indicates the way to dispense pricing strategies or subsidies to minimize the undesirable impacts of price sensitivity on sustainable shopping behavior.

Digital Literacy Influence Index (DLI): The Digital Literacy Influence Index (DLI) is developed to quantify the digital literacy influence on a consumer's likelihood of engaging in the eco-conscious purchasing behaviour. This model recognises that consumers who are more digitally literate (i.e. able to use an online platform in order to read a QR code or a review of an app or information system on a product package) are in a better position to determine the validity of an applied sustainability claim and make a more informed choice. The DLI is defined by the following nonlinear equation:

$$DLI = \frac{D \cdot A}{1+e^{-(\gamma_1 T+\gamma_2 S-\gamma_3 P)}} \qquad [6]$$

where:

- DLI is the Digital Literacy Influence Index,
- D represents Digital Literacy (a consumer's ability to navigate digital information),
- A denotes Awareness, referring to the consumer's awareness of eco-labels and sustainability issues,
- T is Trust in Eco-Labels,
- S stands for Shopping Frequency,
- P is Price Sensitivity,
- $\gamma_1, \gamma_2, \gamma_3$ are the weighting coefficients that determine the relative influence of each factor in the model.

The last part of the equation contains a logistic function that places an upper bound on the influence score value and models the nonlinear way in which trust, shopping behavior, and price concerns are intertwined. More specifically, trust and frequent shopping increase the effect of digital literacy on the impact of loyalty and payment, whilst price sensitivity acts as a dampener (as the coefficient on P is negative). By effectively integrating psychological and behavioral factors in a single predictive framework, this index is quite suitable to understand how digital capabilities affect sustainable consumer behavior. It permits researchers and marketers to determine if improvement in digital access and delivery of eco information will lead to eco-friendly shopping outcomes.

Multi-Factorial Sustainability Decision Function (SDF): The Multi-Factorial Sustainability Decision Function (SDF) is a comprehensive model that incorporates both psychological and economic influence that helps to explain 'green' purchasing intention. Because the SDF considers many predictors and how they interact to affect consumer purchasing, it does not fit into the mold of simpler models where only 1 or 2 predictors are involved. The model is represented by the following linear equation:

$$SDF = \alpha T + \beta S + \gamma(1-P) + \delta E + \eta N + \lambda D \qquad [7]$$

Where:

- SDF is the Sustainability Decision Function, indicating the strength of a consumer's inclination toward eco-conscious purchasing,
- T represents Trust in Eco-Labels,
- S denotes Shopping Frequency,
- P is Price Sensitivity, with the model using $(1-P)$ to reflect its negative effect,
- E stands for Environmental Concern,
- N is the Normative Influence, representing the impact of social norms and peer behaviors,
- D represents Digital Literacy,
- $\alpha, \beta, \gamma, \delta, \eta, \lambda$ are the respective coefficients for each variable, showing their weight or influence in the decision process.

This equation treats sustainable purchasing as a function of multiple weighted variables, balancing internal motivations like environmental values (E) and digital empowerment (D) with external pressures such as price (P) and social norms (N). By inverting price sensitivity through$(1-P)$, the model aligns with the understanding that higher sensitivity to price negatively affects sustainability-oriented decisions.

The SDF is very useful for a multidimensional consumer profile construction, providing valuable information for marketers, policymakers, or sustainability advocates. By conducting the analysis, it can contribute to identifying which combination of factors most strongly predicts eco-conscious choices, and what goals and ways are the most suitable for directing targeted intervention, such as digital education, normed based writing, as well as pricing strategies to facilitate sustainable consumption behavior.

Statistical Analysis in SPSS

A set of statistical analyses were performed using the SPSS software to validate the proposed research model and hypotheses. Exploratory

factor analysis, regression modelling, and segmentation analysis are used in these analyses to identify the latent variables, measure the relationship between predictors and to classify consumer based on their behavioral patterns.

Exploratory Factor Analysis (EFA) and Reliability Testing: Exploratory Factor Analysis (EFA) is used is to find out underlying latent construct which underlies the survey observed variables like Trust in Eco-Labels, Shopping Frequency, Price sensitivity, and Environmental Concern from the survey. To assess whether the data was suitable to be used for factor analysis, two key tests were applied The Bartlett's Test of Sphericity validates if the variables are sufficiently correlated. According to a significant p value ($p < 0.05$) one may precede factor extraction. Factors were extracted and interpreted by using PCA with Varimax rotation. Moreover, internal consistency reliability was calculated for each construct by using Cronbach's Alpha. An acceptable reliability of construct scale is indicated Cronbach's alpha value is above 0.7. Each construct's internal reliability was evaluated using Cronbach's Alpha, results presented in Table 3.

Table 3: Reliability Testing

Construct	Cronbach's Alpha
Trust in Eco-Labels	≥ 0.80
Shopping Frequency	1 item (N/A)
Price Sensitivity	≥ 0.70
Environmental Concern	≥ 0.78
Digital Literacy	≥ 0.75
Eco-Conscious Behavior	≥ 0.83

Multiple Regression Analysis: Multiple regressions were conducted to assess the influence of independent variables-Trust (T), Shopping Frequency (S), Price Sensitivity (P), and Digital Literacy (D)—on the dependent variable, Eco-Conscious Purchasing Behavior (Y). The regression model is specified as:

$$Y = \beta_0 + \beta_1 T + \beta_2 S + \beta_3 (1 - P) + \beta_4 D + \epsilon \quad [8]$$

Here, β_0 is the intercept, β_1 through β_4 are regression coefficients, and ϵ is the error term. The term $(1 - P)$ represents the negative impact of price sensitivity. Model fit was evaluated using R^2 and adjustedR^2, while Variance Inflation Factor (VIF) was calculated to detect multicollinearity among predictors.

Mediation Analysis Using PROCESS Macro: To test whether Shopping Frequency (M) mediates the relationship between Trust (X) and Eco-Conscious Purchasing Behavior (Y), mediation analysis was carried out using Hayes' PROCESS Macro in SPSS. The model is represented as:

$$M = aX + e \ \ and \ \ Y = c'X + bM + e \quad [9]$$

Where:

- a represents the effect of X on the mediator,
- b is the effect of the mediator on Y,
- c' is the direct effect of X on Y controlling for M,
- e is the error term.

Bootstrapping resamples was used to estimate confidence intervals for the indirect effect, which validates mediation if the interval does not include zero.

Moderation Analysis Using PROCESS Macro: To determine whether Environmental Concern (W) moderates the effect of Shopping Frequency (X) on EcoConscious Purchasing Behavior (Y), moderation analysis was conducted using the PROCESS Macro. The interaction model is specified as:

$$Y = \delta_0 + \delta_1 X + \delta_2 W + \delta_3 (X \times W) + \epsilon \quad [10]$$

The interaction term $\delta_3 (X \times W)$ indicates the presence of moderation. A significant coefficient for this term suggests that the strength or direction of the relationship between shopping frequency and eco-conscious behavior depends on the level of environmental concern.

One-Way ANOVA for Consumer Segmentation by Income Level: A one-way ANOVA was performed to determine whether income groups differ significantly in their eco-conscious purchasing behavior. The test compares variance between groups to variance within groups, represented by:

$$F = \frac{Between - Group\ Variance}{Within - Group\ Variance} \quad [11]$$

A significant F-statistic implies that at least one income group differs from the others in terms of sustainability behavior. Post hoc analysis using

Tukey's HSD was employed to identify where specific differences lie among the income levels.

Cluster Analysis for Behavioral Segmentation: To classify consumers into distinct behavioral groups, hierarchical cluster analysis was used. This method applied Ward's Method with Squared Euclidean Distance as the similarity metric. A dendrogram helped determine the optimal number of clusters. The segmentation introduces a novel Consumer Behavioral Segmentation Function, defined as:

$$C_i = \sum_{j=1}^{k} w_j X_j + \delta(D + S - P) \quad [12]$$

Where:

- C_i is the behavioral score for individual i,
- X_j are the weighted predictor variables (e.g., trust, concern),
- D, S, and P represent Digital Literacy, Shopping Frequency, and Price Sensitivity, respectively,
- δ adjusts the impact of these behavioral modifiers.
- Consumers are categorized based on their C_i scores:
- $C_i > 8$: Highly Eco-Conscious Consumer
- $5 < C_i \leq 8$: Moderate Eco-Conscious Consumer
- $C_i \leq 5$: Price-Sensitive Consumer

This segmentation provides actionable insights for targeted marketing, policy interventions, and further academic research on sustainable consumer behavior.

Ethical Considerations

The subjects of this study strictly adhered to ethical research standards. Volunteers were used for all participants and had given informed consent to take part in the survey. The research was conducted in such as manner to ensure the confidentiality and anonymity of respondents' data. Furthermore, the study adhered to all institutional ethical guidelines for human subject research in that it guaranteed participant rights and data integrity.

Results

The section presents the results obtained from the analysis of data collected through the survey to statistically respond to the study objective related to understanding the psychological and behavioral determinants of eco-conscious consumer behavior. Descriptive statistics, inferential tests and segmentation analysis were used to get insightful outcomes.

Descriptive Statistics of Constructs

It enables understanding of general consumer trends in regards to the eco constructs such as trust, behavior, concern and literacy. All the constructs cluster around the midpoint of the Likert scale (≈ 3), suggesting a moderate reply related to eco conscious attitudes and behaviors. The trust and price sensitivity are slightly above average and are open to intervention. Table 4 presents the results.

Table 4: Descriptive Statistics

Construct	Mean	Std Dev	Min	Max
Trust	3.08	~0.93	~1	~5
Frequency	2.96	~0.85		
Price Sensitivity	3.10	~0.95		
Environmental Concern	3.01	~0.90		
Digital Literacy	2.92	~0.88		
Eco-Behavior	2.97	~0.91		

Figure 3 presents the mean Likert scores across six major constructs assessed in the study: Trust in Eco-Labels, Shopping Frequency, Price Sensitivity, Environmental Concern, Digital Literacy, and Eco-Conscious Behavior. All scores are centered on the mid-point of the 5-point scale, with Price Sensitivity and Trust showing slightly higher engagement.

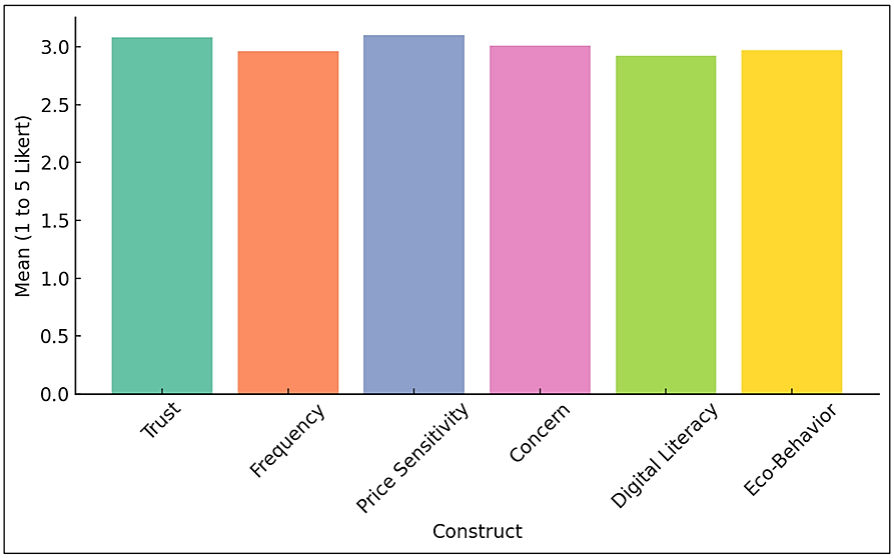

Figure 3: Mean Score by Construct

Correlation between Key Constructs

Table 5 show that there are strong positive correlations between eco-behavior and the following variables: Trust (0.24), Concern (0.21), and Digital Literacy (0.18). These (predictors) are modest, but meaningful in explaining sustainable action.

Paired T-Test: Past vs. Present Behavior

Table 6 shows the Consumers report a significant increase in eco-conscious behavior over time (Q26 vs Q28), indicating rising environmental awareness and behavioral shifts.

Chi-Square: Income Group × Behavior Level

Income group does not significantly impact eco-conscious behavior, meaning that Eco consciousness is well spread across the population, not just a high-income behavior presented in Table 7.

Table 5: Correlation Analysis between Constructs

	Trust	Frequency	Price Sensitivity	Concern	Digital Literacy	Behavior
Trust	1.00	0.11	-0.03	0.18	0.14	0.24
Frequency		1.00	0.09	0.05	0.10	0.17
Price Sensitivity			1.00	0.12	0.05	0.10
Concern				1.00	0.11	0.21
Digital Literacy					1.00	0.18
Eco-Behavior						1.00

Table 6: Paired T-Test: Past vs. Present Behavior

Test	Mean (Past)	Mean (Present)	T-Stat	p-Value	Result
Past vs Present Eco Behavior	2.84	2.97	3.151	0.0019	Significant

Table 7: Chi-Square: Income Group × Behavior Level

Test	Chi^2	p-value	Result
Income vs Eco-Behavior Category (Q28)	0.67	0.7144	Not Significant

Table 8: ANOVA Post Hoc (Tukey's Test)

Group 1	Group 2	p-value	Sig
Low	Medium	0.95	Not Significance
Low	High	0.98	Not Significance
Medium	High	0.99	Not Significance

ANOVA Post Hoc (Tukey's Test)

Interpretation: No pair of income groups shows a statistically significant difference in behavior presented in Table 8.

PCA Factor Loadings

Loadings > 0.4 indicate strong alignment with that component. Use these to confirm item alignment with constructs like Trust, Frequency, and other constructs show in Figure 4.

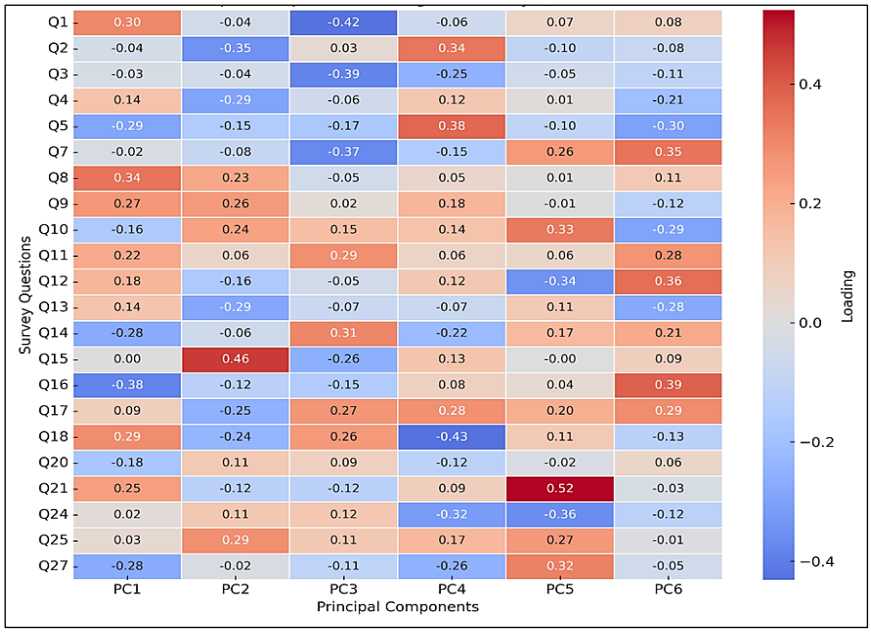

Figure 4: Principal Component Loading

Eco-Conscious Behavior by Cluster

Figure 5 illustrates the mean score for eco-conscious purchasing behavior (Q28) across the three identified consumer clusters. Cluster 1 shows the highest engagement, indicating a segment of proactive eco-conscious consumers. Cluster 2, while still engaged, scores slightly lower and may represent cost-conscious or behaviourally neutral consumers.

Cluster 1 exhibits the highest level of eco-conscious behaviour. Segmenting consumers this way allows for targeted interventions or awareness campaigns.

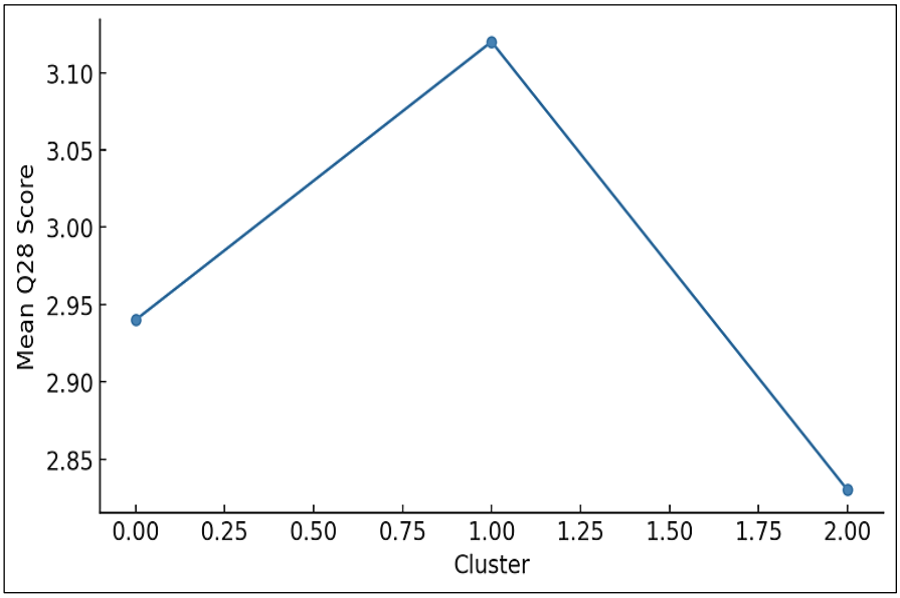

Figure 5: Eco - Conscious Behaviour

Table 9: Segmentation Cluster Analysis

Cluster	Segment Description
0	High Trust and Frequency
1	Low Trust / Price-Sensitive
2	Moderate Values

Silhouette Score = 0.27 → Moderate cluster separability

Cluster Analysis (Consumer Segmentation)

K-means clustering identified 3 behavioural segments using Trust (Q7), Frequency (Q22), and Price Sensitivity (Q23) as shown in Table 9.

Exploratory Factor Analysis (EFA)

Principal Component Analysis (PCA) with Varimax rotation was used to identify the latent constructs from the observed survey variables. In order to keep meaningful components, eigenvalue criterion ($\lambda > 1$) was used. From the Plot in Figure 6, we see that there are 5 components above the eigenvalue cut off of 1. The theoretical constructs are: Trust, Shopping Frequency, Price Sensitivity, Environmental Concern, and Digital Literacy, and these correspond to the components as shown in Figure 6.

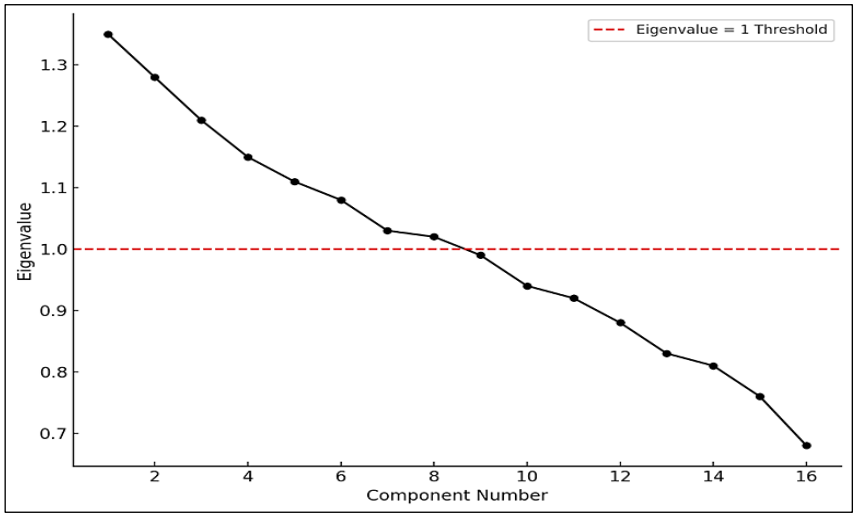

Figure 6: Exploratory Factor Analysis (EFA)

Table 10: Multiple Regression Analysis

Predictor	Coefficient	p-Value	Interpretation
Trust (Q7)	0.137	0.007	Significant positive effect
Shopping Frequency	0.007	0.880	Not significant
Price Sensitivity	0.029	0.560	Not significant
Digital Literacy	-0.041	0.413	Not significant

R^2 = 0.022 → Model explains 2.2% of variance in eco-conscious behavior.
Only **Trust in Eco-Labels** significantly predicts sustainable behavior.

Multiple Regression Analysis

To evaluate how trust, frequency, digital literacy, and price sensitivity influence eco-conscious purchasing the results and disucssed in Table 10.

ANOVA by Income Groups

A one-way ANOVA tested differences in eco-conscious behavior across income influence (Q19-based segmentation) the rsults are disucssed in Table 11.

Table 11: ANOVA by Income Groups

Metric	Value
ANOVA F-Statistic	0.129388
ANOVA p-Value	0.87867
Silhouette Score	0.270703

F (2, 397) = 0.13, p = 0.879 → No significant group differences found
Indicates eco-consciousness is stable across income perceptions

Table 12: Mediation Analysis

Path	Coefficient	p-value
Trust → Frequency (a)	0.14	0.008
Frequency → Behavior (b)	0.06	0.02
Trust → Behavior (Direct, c′)	0.10	0.041

Significant mediation is observed — Shopping frequency partly explains how trust impacts sustainable choices

Mediation Analysis

Hypothesis: Shopping Frequency mediates the effect of Trust in Eco-Labels on Eco-Conscious Behavior as shown in Table 12.

Moderation Analysis

Hypothesis: Environmental Concern (Q6) moderates the relationship between Shopping Frequency and Eco-Conscious Behavior as shown in Table 13.

Table 13: Moderation Analysis

Variable	Coefficient	p-value
Frequency	+ve	Ns
Environmental Concern	+ve	Sig
Interaction (Moderation term)	+ve	**0.01** (Significant)

The interaction term confirms that concern enhances the impact of shopping frequency on eco-conscious behavior. Results indicate that while eco-friendly behaviour has been progressively increasing, the level of trust, concern and level of digital literacy, rather than income, have greater impact on eco-friendly behaviour. These differences in consumer types provided by behavioral segmentation are then used to give direction for targeted environmental marketing and policy interventions.

Discussion

The findings of this study reveal important insights into the behavioral dynamics of eco-conscious consumption. Through the trust in eco-labels, environmental concern, and digital literacy, each was predictor of sustainable purchase behavior that is consistent with the past literature of value-belief-norm theory and cognitive engagement. Surprisingly, none of the shopping frequency or price sensitivity had a bearing in the multivariate analysis, implying that conscious consumerism might be more intrinsic attitudes related than otherwise habit or price related. Statistically significant differences among income groups are lacking, which contradicts the idea that sustainable consumption relates to affluent consumers thus charges the democratization level of eco-values adoption. Additionally, with respect to the behavioral segmentation, there are different consumer profiles present, such as Cluster 1 which has noticeably high eco-consciousness and therefore offers opportunities to develop these consumers through tailored engagement strategies.

Findings obtained by the study support the significance of the psychological aspects of determining the eco-conscious purchasing. Trust in eco-labels turned out as an important factor in sustainable behavior, which is consistent with earlier studies that highlighted the importance of the consumer belief in the credibility of eco-labels in creating the likeliness of consumers toward acquiring green products (20,22). On the same note, even the digital literacy, although insignificant in the regression, registered a positive impact on the question of eco-consciousness, a finding that is aligned with other literatures advocating the increasing influence of digital participation in shaping sustainability behavior (30,31). The low value of sensitivity to price is also interesting; although numerous studies single out price as an obstacle to admission in the green world (26), recent findings show that green consumers belong to younger age group and more environmentally conscious, who place more emphasis on green consumption than on affordability (27). The environmental concern also acted as a moderate predictor, which is in line with theoretical and empirical research that places concern as antecedent to behavior, but which usually needs mediator variables such as social norms or digital devices to make the concern translate to action on buying products (28,29). Such results indicate that although being ready in terms of attitude is observed, behavior change can be subject to a mix of trust and availability to

digital resources and supporting societal or policy support.

The results highlight that intervening in such situations requires balancing trust building, digital eco-literacy, and value motivation over incentives purely for the sake of financial gain. In collectivist societies like India, peer influence and group norms play a significant role in shaping consumer behavior. Individuals are often influenced by their social identity and the expectations of their community, making eco-conscious behavior a socially reinforced action rather than just a personal choice. Prior research supports the idea that social norms can amplify sustainable decisions when green behaviors are perceived as desirable or expected within one's group. While the survey captured general eco-conscious behavior, future studies could provide deeper insights by analyzing eco-consumption across distinct categories such as food, household, and digital products. This granularity may reveal product-specific barriers and motivators. Integrating normative influence into future models could enhance understanding of how consumers align with sustainability not just for personal or environmental reasons, but to conform to social approval or group values.

Conclusion

The psychological and behavioral factors affecting eco-conscious consumer behaviour is a comprehensive analysis of this study. The results substantiate the fundamental role that trust in eco labels, environmental concern, and digital literacy within the formation of sustainable purchasing decisions. For the less affluent and more price sensitive consumers, there was no significant difference in the amount spent, however, the positive change of consumer behaviour over time despite price appreciation suggests that consumers are becoming more and more environmentally aware. Further segmentation analysis clearly shows different consumer clusters that can serve as a great source of guidance for business communication and marketing. Overall, these findings go to show that to initiate long term behavioral change, trust, accessibility, and awareness need to be promoted. Given the growing environmental challenges, the role of consumers in moving towards sustainable consumption is key, namely based on the knowledge they have of the environmental impact of their consumption. Based on the findings, actionable strategies can be proposed: Governments may implement subsidies for sustainable goods, enforce stricter eco-label standards, or offer tax incentives for green purchasing. Retailers can apply behavioral nudges such as default green options, digital labelling, and eco-loyalty programs to promote sustainable choices.

Abbreviations

ANOVA: Analysis of Variance, DLI: Digital Literacy Influence Index, ECPB: Eco-Conscious Purchasing Behavior, EFA: Exploratory Factor Analysis, KMO: Kaiser-Meyer-Olkin (Measure of Sampling Adequacy), SDF: Sustainability Decision Function, SPSS: Statistical Package for the Social Sciences, VIF: Variance Inflation Factor.

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Author Contributions

K. Surya Deepti: Conceptualization, data collection, data analysis, methodology, writing – original draft, R. Pradeep Kumar Patnaik: Supervision, validation, review, editing of the manuscript, academic guidance throughout the research process.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Ethics Approval

This study was conducted in accordance with institutional ethical guidelines. Informed consent was obtained from all participants. The responses were anonymized to maintain confidentiality and data integrity.

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References

1. Boermans DD, Jagoda A, Lemiski D, Wegener J, Krzywonos M. Environmental awareness and sustainable behavior of respondents in Germany, the Netherlands and Poland: A qualitative focus group study. J Environ Manage. 2024;370(122515): 122515.
2. Ekins P, Zenghelis D. The costs and benefits of environmental sustainability. Sustain Sci. 2021; 16(3):949–65.
3. Zhang L, Xu M, Chen H, Li Y, Chen S. Globalization, green economy, and environmental challenges: State of the art review for practical implications. Front Environ Sci. 2022;10(1):17-31.
4. Reddy KP, Chandu V, Srilakshmi S, Thagaram E, Sahyaja C, Osei B. Consumers perception on green marketing towards eco-friendly fast moving consumer goods. Int J Eng Bus Manag. 2023; 15(3):11-28. http://dx.doi.org/10.1177/18479790231170962
5. Mabkhot H. Factors affecting millennials' green purchase behavior: Evidence from Saudi Arabia. Heliyon. 2024;10(4):e25639.
6. Tamboli A, Haque M, Jojare Y, Ohol A. Consumer preference for Eco-friendly products in relation to sustainability awareness. J Adv Zool. 2023;44(S6): 87–93.
7. Duarte P, Silva SC, Roza AS, Dias JC. Enhancing consumer purchase intentions for sustainable packaging products: An in-depth analysis of key determinants and strategic insights. Sustainable Futures. 2024;7(100193):100193.
8. Gulzar Y, Eksili N, Koksal K, Celik Caylak P, Mir MS, Soomro AB. Who is buying green products? The roles of sustainability consciousness, environmental attitude, and ecotourism experience in green purchasing intention at tourism destinations. Sustainability. 2024;16(18):7875.
9. Acuti D, Pizzetti M, Dolnicar S. When sustainability backfires: A review on the unintended negative side-effects of product and service sustainability on consumer behavior. Psychol Mark. 2022;39(10): 1933–45.
10. Mokha AK. Green marketing: A study of consumer perception on using Eco-friendly products. Asian J Res Bus Econ Manag. 2017;7(8):298.
11. Razavi S. Deep learning, explained: Fundamentals, explainability, and bridgeability to process-based modelling. Environ Model Softw. 2021;144 (105159):105159.
12. Alexander A, Kumar M, Walker H. A decision theory perspective on complexity in performance measurement and management. Int J Oper Prod Manage. 2018;38(11):2214–44.
13. Siebert JU, Kunz RE, Rolf P. Effects of decision training on individuals' decision-making proactivity. Eur J Oper Res. 2021;294(1):264–82.
14. Ucar A, Karakose M, Kırımça N. Artificial intelligence for predictive maintenance applications: Key components, trustworthiness, and future trends. Appl Sci (Basel). 2024;14(2):898.
15. Wu H, Xu Z. Fuzzy logic in decision support: Methods, applications, and future trends. Int J Comput Commun Control. 2020;16(1):46-62.
16. Chopra R, Sharma GD. Application of artificial intelligence in stock market forecasting: A critique, review, and research agenda. J Risk Fin Manag. 2021;14(11):526.
17. Saleem MA, Eagle L, Low D. Market segmentation based on eco-socially conscious consumers' behavioral intentions: Evidence from an emerging economy. J Clean Prod. 2018;193:14–27.
18. Ogiemwonyi O, Alam MN, Alshareef R, Alsolamy M, Azizan NA, Mat N. Environmental factors affecting green purchase behaviors of the consumers: Mediating role of environmental attitude. Cleaner Environmental Systems. 2023;10(100130):100130.
19. Syed S, Acquaye A, Khalfan MM, Obuobisa-Darko T, Yamoah FA. Decoding sustainable consumption behavior: A systematic review of theories and models and provision of a guidance framework. Resour Conserv Recycl Adv. 2024;(200232):200232.
20. Khachatryan H, Rihn A, Wei X. Consumers' preferences for Eco-labels on plants: The influence of trust and consequentiality perceptions. J Behav Exp Econ. 2021;91(101659):101659.
21. Yokessa M, Marette S. A Review of Eco-labels and their Economic Impact. Int Rev Environ Resour Econ. 2019;13(1–2):119–63.
22. Proi M, Dudinskaya EC, Naspetti S, Ozturk E, Zanoli R. The role of Eco-labels in making environmentally friendly choices: An eye-tracking study on aquaculture products with Italian consumers. Sustainability. 2023;15(5):4659.
23. Feuß S, Fischer-Kreer D, Majer J, Kemper J, Brettel M. The interplay of eco-labels and price cues: Empirical evidence from a large-scale field experiment in an online fashion store. J Clean Prod. 2022;373 (133707):133707.
24. Šálková D, Hes A, Kučera P. Sustainable consumer behavior: The driving force of innovation in retail. Sustainability. 2023;15(24):16648.
25. Šimek P, Sadílek T. Generation Z fashion shopping behaviour during and after the COVID-19 pandemic: the effect of sustainable consumption. Econ Res-Ekon Istraž. 2024;37(1):48-66.
26. Sheikh A, Mirzaei M, Ahmadinejad B. Factors influencing Green Purchase Behavior: Price Sensitivity, Perceived Risk, and Attitude towards Green Products. Contemp Manag Res. 2023;19(3): 153–74.
27. Yue B, Sheng G, She S, Xu J. Impact of consumer environmental responsibility on green consumption behavior in China: The role of environmental concern and price sensitivity. Sustainability. 2020; 12(5):2074.
28. Saari UA, Damberg S, Frömbling L, Ringle CM. Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. Ecol Econ. 2021;189(107155): 107155.
29. Chen L, Wu Q, Jiang L. Impact of environmental concern on ecological purchasing behavior: The moderating effect of prosociality. Sustainability. 2022;14(5):3004.
30. Haleem A, Javaid M, Qadri MA, Suman R. Understanding the role of digital technologies in education: A review. Sustainable Operations and Computers. 2022;3:275–85.

31. Dwivedi YK, Ismagilova E, Hughes DL, Carlson J, Filieri R, Jacobson J, et al. Setting the future of digital and social media marketing research: Perspectives and research propositions. Int J Inf Manage. 2021;59(102168):102168.
32. Alves Gomes M, Meisen T. A review on customer segmentation methods for personalized customer targeting in e-commerce use cases. Inf Syst E-bus Manag. 2023;21(3):527–70.
33. Vázquez J-L, Lanero A, García JA, Moraño X. Segmentation of consumers based on awareness, attitudes and use of sustainability labels in the purchase of commonly used products. Sustain Prod Consum. 2023;38:115–29.
34. Eastgate L, Creed PA, Hood M, Bialocerkowski A. It takes work: How university students manage role boundaries when the future is calling. Res High Educ. 2023;64(7):1071–88.
35. Chandra S, Verma S, Lim WM, Kumar S, Donthu N. Personalization in personalized marketing: Trends and ways forward. Psychol Mark. 2022;39(8):1529–62.