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Analysing the Impact of Consumer Behaviour on Sustainable Purchasing Decisions and Its Role in Fostering Responsible Consumption under SDG 12: A Structural Equation Modeling Approach

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ABSTRACT

Purpose: The aim of this study is to investigate the factors influencing sustainable purchasing behaviour in accordance with Sustainable Development Goal (SDG 12) emphasizing the impact of psychological, social and cognitive elements on sustainable purchase intentions and actual purchase intentions and actual purchasing actions. The study enhances the Theory of Planned Behaviour (TPB) by including environmental concern and environmental knowledge as fundamental roots.

Design/ Methodology/ Approach: A quantitative cross sectional survey methodology was employed. Data were gathered from 245 participants utilizing a standardised questionnaire employing five-point Likert scale. The interrelation among constructs were analysed utilizing Partial Least Square Structural Equation Modelling (PLS-SEM) with SmartPLS 4. The examination of the measurement model encompassed reliability and validity tests whereas structural correlations were analysed by bootstrapping with 5000 resamples.

Findings: The findings demonstrate that environmental awareness, concern, attitude towards sustainable items, perceived behavioural control and subjective norms strongly affect the intention to purchase sustainably. Moreover, the intention to shop sustainably is a robust predictor of actual sustainable purchasing behaviour. The model has robust explanatory capability and satisfactory fit. However, gap between intention and behaviour remains signifying that positive intentions may not invariably results in actual purchases due to external limitations such as expenses, accessibility and convenience.

Implication: The research offers actionable insights for policymaker, marketers and educators to promote sustainable consumption via awareness initiatives, enhanced accessibility and supporting regulatory structures.

Originality/ Value: The study enhances the Theory of Planned Behaviour by incorporating environmental factors and experimentally substantiates a comprehensive model of sustainable consumption behaviour within the framework of Sustainable Development Goal 12.

Keywords: *Sustainable Consumption, Theory of Planned Behaviour, Environmental Knowledge, Sustainable Purchase Intention, Sustainable Behaviour.*

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INTRODUCTION

The increasing demand for a worldwide move towards sustainable consumption and production has positioned consumer behaviour at the core of sustainability concerns. The significance of ensuring sustainable consumption and production patterns is emphasized by the United actions 2030 Agenda, particularly sustainable development 12 (Giurco, 2020). In this context, it has become critical to acknowledge the effect of consumer behaviour on sustainable purchasing decisions and responsible consumption in order to meet sustainability objectives. The need to examine the psychological, social and cultural components that impact sustainable consumption practices has been further intensified by the growing concerns regarding environmental degradation, depletion of natural resources and climate change.

Consumer behaviour has grown beyond the traditional framework of economic rationality to encompass social norms, values, attitudes and beliefs. The term "sustainable purchasing" signifies the usage of products that are socially responsible, ethically produced and environmentally favorable (Joshi et al., 2021). Consumers have shown an affection for sustainable products as a result of increasing awareness of environmental issues (Park & Lin, 2020). However, a significant "attitude-behaviour gap" continues to be present (Saracevic & Schlegelmilch, 2021). Regardless of the notion that consumers commonly communicate favourable intentions towards sustainable consumption, these intentions are not regularly converted into actual purchasing behaviour as impact of challenges such as high cost, limited availability and poor convenience (Gera et al., 2023).

The determinants that impact sustainable purchasing behaviour are varied and complex. The sustainable purchase decisions of consumers are greatly affected by psychological factors, including environmental concern, perceived consumer effectiveness and individual values (Lee et al., 2020). The TPB (Theory of Planned Behaviour) suggests that attitude, subjective norms and perceived behavioural control substantially affect purchasing intentions with new additions integrating environmental information ethics (Joshi et al., 2021). Moreover, external factors including governmental legislation, corporate sustainability efforts and marketing communications impact consumer choices, establishing an endless cycle of responsible consumption (Chen, 2016).

In spite of increased knowledge sustainable consumption is still constrained especially in developed economies owing to economic and infrastructural obstacles (Wu & Liu, 2022). Socio-demographic characteristics and environmental knowledge significantly affect consumer decisions (Cayaban et al., 2023; Nath & Agrawal, 2023) whereas education and awareness program are essential for promoting enduring behavioural change (Patel et al., 2017). Consequently, analysing these characteristics is crucial for promoting responsible consumption in accordance with SDG 12 (Eze & Ndubisi, 2013).

LITERATURE REVIEW

Introduction to Sustainable Consumption and SDG 12

Sustainable Development Goal 12 is a global effort which seeks to integrate economic development ecological sustainability, whereas also encouraging responsible consumption and production (Lehner et al., 2016). Consumer behaviour is important for the successful implementation of sustainable shifts in the context of rising global environmental issues and resource depletion (Bray et al., 2011). Regardless of the fact that the research demonstrates that a significant portion of consumers agree to pay a premium for sustainable products (Ruiz-Real et al., 2019), an inequality exists between consumer's intention and their actual purchasing behaviour (Jung et al., 2020). Psychological barriers, economic constraints and limited access to sustainable products all lead to this "green gap" (Carrington et al., 2010). Moreover, consumer preference has significant effect on the formation of organizational strategies and policy decisions (Grewal et al., 2020). Therefore, it is crucial to understand the complex relationship of cognitive, social and economic factors as a means to establish interventions which encourage sustainable consumption and assist in achieving SDG 12 (Shehawy & Khan, 2024).

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Psychological Drivers of Sustainable Purchasing Behaviour

Environmental Awareness and Attitude

Consumer attitude towards sustainability is greatly influenced by individual beliefs and awareness of environment (Reisch et al., 2016). However, the "attitude-behaviour gap" continues to exist as consumers who hold significant environmental views are more likely to opt for sustainable products. This is due to the fact that convenience, price and regular purchasing habits consistently override environmental concerns (Carrington et al., 2010). This variation is additionally explained by cognitive dissonance, which arises when people rationalize unsustainable decisions by citing perceived constraints or an assurance that their actions have a minor environmental impact. The circumstances are further aggravated by the high prices of eco-friendly alternatives, limited products availability and inadequate information. Sustainable purchasing behaviour can be encouraged through education, transparent labelling and supportive policies (Grewal et al., 2020)

Perceived Consumer Effectiveness

Perceived Consumer Effectiveness (PCE) is the assumption that an individual's action can have a significant effect on environmental outcomes. Consumers are more likely to engage in sustainable behaviours including minimizing the amount of waste and the purchasing of sustainable products, when their PCE levels are increased. However, this assumption may be compromised by concerns such as greenwashing and concerns regarding the effectiveness and efficiencies of individual efforts (Teichmann et al., 2023). Transparent communication, credible sustainability claims and collective initiatives that display measurable environmental benefits are all required to ensure the formalization of PCE. This can be facilitated by policymakers who implement regulation against misleading environmental claims and encourage successful sustainability initiatives. These measures possess the capacity to empower consumers to regularly engage in responsible consumption practices that are consistent with sustainability development goal 12 (Strähle & Gräff, 2017).

Social and Cultural Influence on Sustainable Consumption

Social Norms and Peer Influence

Sustainability purchasing behaviour is considerably affected by social norms, which are expressed through direct social influence and indirect behavioural indicators (Poškus, 2016). Social identity theory asserts that individuals frequently adjust their behaviour to group expectations, especially when sustained action improve their social image and acceptance (Egan, 2017; Jung et al., 2020). The "visibility effect" further indicates that consumers are more apt to follow sustainable practices that are widely observable such as the use of reusable products, in contrast to individual environmentally responsible behaviour. Social media amplifies this influence by endorsing sustainable practices (Chenavaz & Dimitrov, 2024). However, "eco-conformity" may lead to perfunctory measures. Research indicates that descriptive norms surpass perspective messaging in efficacy, promoting brands to advocate for observable and socially supported sustainable practices.

Cultural Variations in Sustainable Consumption

Sustainability consumption patterns vary among cultures due to differences in values, social norms and institutional frameworks (Čapienė et al., 2022). According to the Hofstede's culture theory, individualistic societies indicate a greater strong correlation between sustainable behaviour and personal values than collectivist cultures (Ruiz-Real et al., 2019). The OECD (2008) has noticed that Scandinavian countries have the capacity to formalise sustainability as a common practice as an effect of their supportive institutions and social conventions. On the other hand, emerging markets often experience a "sustainability paradox" in which present consumerism serves as a symbol of social status regardless the emergence of traditional sustainable practices. In general, social networks encouraged shared consumption whereas western cultures highlight individual ownership. Therefore, sustainability initiatives should be consistent with the existing cultural values and societal expectations (Reischet al., 2016).

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Economic Barriers and Enablers of Sustainable Purchasing

Price Sensitivity and the Cost Barrier in Sustainable Consumption

A substantial intention-behaviour gap is shown by the economics of sustainable consumption. Regardless of the fact that a substantial portion of consumers are ready to pay a premium for environmentally sustainable products, only a small percentage of them actually do so when they are presented with higher prices (Miele et al., 2024). Sustainable products are frequently priced at a premium of 20-30%, which renders them less accessible to consumers who are price sensitive (OECD, 2008). This contributes to socioeconomic disparities, as higher-income groups are more capable of obtaining sustainable alternatives than lower-income households (Bray et al., 2011). Moreover, concerns regarding perceived value and "greenflation" serve to discourage adoption, particularly in product categories with high price sensitivity, thereby restricting the widespread adoption of sustainable consumption practices.

Government Policies and Economic Incentives for Sustainable Consumption

By mitigating economic and structural impediments government interventions are essential for promoting sustainable consumption. Regulatory measures, including the prohibition of single-use plastics, have made a substantial contribution to the reduction of environmental damage (Miele et al., 2024). The affordability and appeal of sustainable alternatives are enhanced by economic instruments such as subsidies for renewable energy and carbon pricing (OECD, 2008). Behavioural strategies, including incentives and nudges, bolster adoption by positively impacting consumer decision making (Khandewal et al., 2019). Moreover, innovative programs such as environmental reward programs and income-based subsidies foster increased public engagement. Collectively, these measures contribute to the reduction of affordability disparities and the promotion of sustainable purchasing behaviour among various socioeconomic groups.

The Intention-Action Gap in Sustainable Consumption

The variation between consumer's environmental concern and their actual purchasing behaviour is an important hurdle to sustainable consumerism. Although a significant number of consumers communicate significant apprehensions regarding sustainability, only a small proportion of them consistently translate these apprehensions into actual purchasing behaviour (Carrington et al., 2010). This disparity is influenced by obstacles such as restricted access to sustainable products particularly in low-income or rural regions and entrenched consumer behaviours (Jung et al., 2020). Information overload and ambiguous sustainability assertions impede decision making. Strategies such as nudges gamification and standardised eco-labelling have demonstrated efficacy in enhancing comprehension and promoting sustainable purchase (Bray et al., 2011; Matharu et al 2020; OECD, 2008).

Conceptual Framework

In the context of SDG 12- Responsible Consumption and Production, the present study offers a conceptual framework for the assessment of the factors that impact sustainable purchase behaviour (Ajzen, 2011). This framework is based on the Theory of Planned Behaviour, which was initially created by Icek Ajzen and provides insights into the direct effect of behavioural intentions on actual behaviour. The study improves based on the conventional Theory of Planned Behaviour by adding environmental concern and environmental knowledge as extra antecedents that influences sustainable purchase intention.

The framework posits that sustainable purchase intention is sustainable purchase intention has a major impact by environmental concern, environmental knowledge, attitude towards sustainable products, subjective norms and perceived behavioural control, which in turn affects sustainable purchase behaviour. Consumer's awareness and sensitivity to environmental issues as well as their propensity to contribute to environmental protection are reflected in their environmental concern (Giurco, 2020). Informed decision making is facilitated by environmental knowledge, which is the comprehension of sustainable products and environmental consequences by consumer (Nath & Agarwal, 2023). Attitude towards sustainable products includes assessments of eco-friendly products that

are either favorable or unfavorable (Park & Lin, 2020). Subjective norms are indicative of the social pressure or influence that peers, family and society exert on individuals with respect to sustainable behaviour (Joshi et al., 2021). Conversely, perceived behavioural control is a reflection of the perceived ease or difficulty that consumers experience when engaging in sustainable purchasing behaviour (Ajzen, 2011). Collectively, these constructs contribute to the formation of consumer's sustainable purchase intention, which in turn motivates sustainable purchase behaviour and supports responsible consumption practices that are consistent with SDG 12.

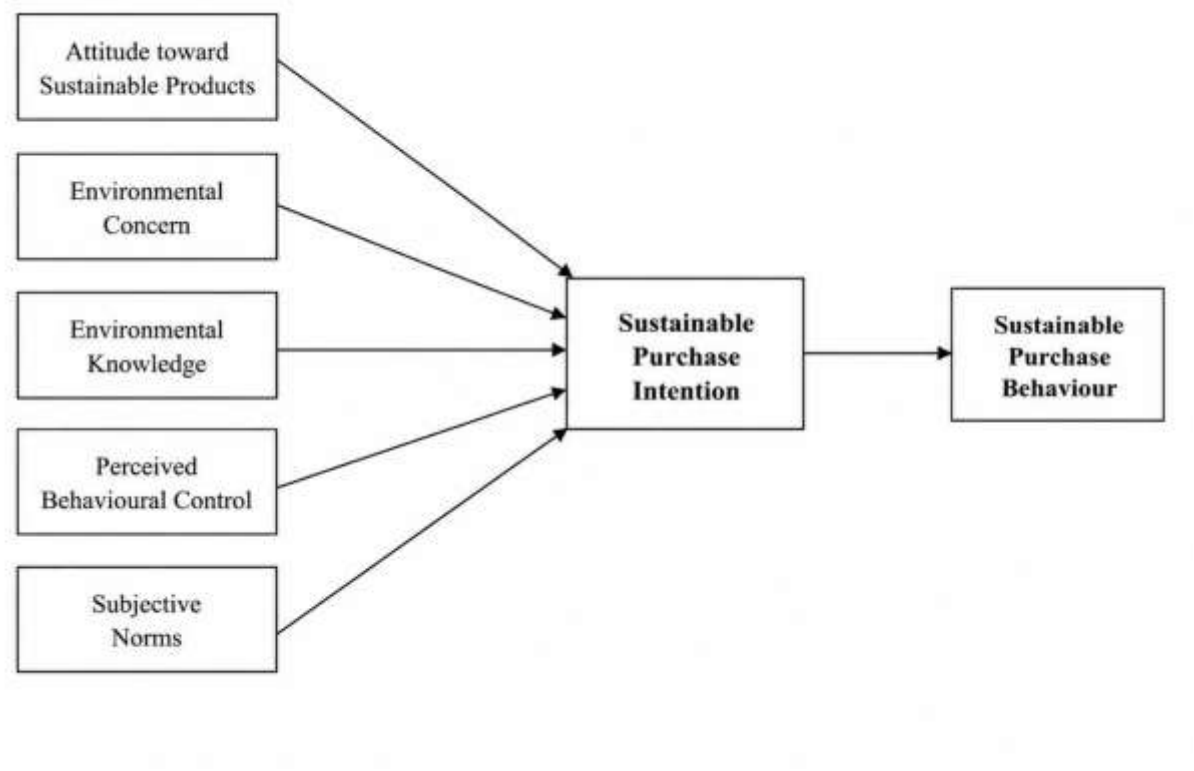

Figure 1: Conceptual Framework

Hypothesis Development

H1: Attitude toward Sustainable Products has significant influence on Sustainable Purchase Intention.

The positive or negative evaluation of environmentally favorable products by consumers is referred to as their attitude towards sustainable products. Consumer who regards sustainable products as environmentally responsible, beneficial and valuable are more inclined to form favorable purchase intentions. As per the Theory of Planned Behaviour, attitude is one of the most potent predictors of behavioural intention (Ajzen, 2011). Consequently, consumer's readiness to participate in sustainable purchasing practices is enhanced by a favorable attitude towards sustainable products. The substantial influence of consumer attitude on sustainable purchase intention has also been substantiated by prior research (Park & Lin, 2020).

H2: Environmental Concern has significant influence on Sustainable Purchase Intention.

Environmental concern is the extent to which consumers are cognizant of environmental issues and are prepared to make a contribution to environmental protection. Consumers who are more environmentally conscious are more inclined to favour sustainable and eco-friendly products, as they believe that their purchasing decisions are contributing to the preservation of the environment. Studies has found out that environmentally conscious consumers exhibit more robust intentions towards responsible purchasing behaviour and sustainable consumption.

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Therefore, it is anticipated that environmental concern will have a beneficial impact on the intention to make a sustainable purchase (Giurco, 2020).

H3: Environmental Knowledge has significant influence on Sustainable Purchase Intention.

Consumer's understanding of environmental issues, sustainable product and the environmental repercussions of their consumption behaviour is referred to as environmental knowledge. Consumers who are more knowledgeable about the environment are better equipped to assess sustainable alternatives and make informed purchasing decisions. This knowledge fosters environmentally responsible consumption practices and raises awareness of the advantages of sustainable products. Previous research has demonstrated that consumers who are well-informed are more inclined to cultivate favorable intentions regarding sustainable purchasing ((Nath & Agarwal, 2023).

H4: Perceived Behavioral Control has significant influence on Sustainable Purchase Intention.

Consumer's perception of the ease or complexity of engaging in sustainable purchasing behaviours are reflected in their perceived behavioural control is influenced by factors such as affordability, accessibility, product availability and individual capability. Consumers are more inclined to cultivate robust purchase intentions when they perceive that they have adequate resources, opportunities and control over the acquisition of sustainable products. Perceived behavioural control has a substantial impact on both behavioural intention and actual behaviour as per the Theory of Planned Behaviour (Ajzen, 2011).

H5: Subjective Norms has significant influence on Sustainable Purchase Intention.

Subjective norms are the social pressures that individual perceive from family members, friends, colleagues and society in relation to a specific behaviour. Consumers are frequently influenced by the expectations and opinions of significant social groups in the context of sustainable consumptions. Environmentally responsible behaviour can be encouraged by positive reinforcement from peers and society, which can encourage consumers to adopt sustainable purchasing practices. Subjective norms have been identified as a substantial determinant of sustainable purchase intention in previous research (Joshi et al., 2021).

H6: Sustainable Purchase Intention has significant influence on Sustainable Purchase Behaviour.

Consumer's preparedness and willingness to participate in environmentally responsible purchasing practices are referred to as sustainable purchase intention. The immediate antecedent of actual behaviour is behavioural intention, as per the Theory of Planned Behaviour (Ajzen, 2011). Consumers who have strong intentions toward sustainable consumption are more likely to translate these intentions into actual sustainable purchasing behaviour. Consequently, it is anticipated that sustainable purchase intention will have a substantial impact on sustainable purchase behaviour.

RESEARCH DESIGN

This study used a quantitative and cross-sectional research approach to investigate the factors influencing sustainable purchasing behaviour and its role in promoting responsible consumption in accordance with SDG 12. A non-probability convenience sampling techniques was employed to capture data through a structured questionnaire. A total of 245 responses were obtained from consumers who are familiar with sustainable products through online academic and professional networks.

The data analysis in the investigation was conducted using Partial Least Squares Structural Equation Modelling (PLS-SEM) with Smart PLS (Gefen et al., 2000). The analysis was conducted in two phases. Initially, the reliability and validity of the measurement model were evaluated using Cronbach's (1951) Alpha, Composite Reliability and Average Variance Extracted (AVE). Secondly, the proposed hypothesis and relationships among constructs were tested by examining the structural model.

A five-point Likert Scale was employed to measure all variables, with a range of 1 (Strongly Disagree) to 5 (Strongly Agree). The study utilized demographic variables, including age, gender, income and education to facilitate respondent profiling.

DATA ANALYSIS AND FINDINGS

Assessment of Measurement Model

Reliability analysis was performed using SPSS employing Cronbach's (1951) Alpha values to evaluate the internal consistency of all construct so assuring adequate reliability before proceeding with further research in SmartPLS in accordance with the requirements of Sarstedt et al. (2022). All measurement item's factor loading surpassed the required threshold of 0.70, signifying robust indicator reliability. Moreover, Cronbach's (1951) alpha and composite reliability (CR) scores for all constructs above 0.70 indicating adequate internal consistency (Bagozzi & Yi, 1988).

Convergent validity was confirmed as the Average Variance Extracted (AVE) values for all constructs surpassed the permissible threshold of 0.50. Table 1 presents the comprehensive results of factor loadings, reliability and average variance extracted (AVE).

Additionally, discriminant validity was evaluated using Fornell Larcker criterion, which stipulates that the square root of the Average Variance Extracted (AVE) for each construct must exceed its correlations with other constructs. This verifies that all constructs are unique and the measurement model exhibits sufficient validity (Fornell & Larcker, 1981).

Table 1: Confirmatory Factor Analysis

	Items	Loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Attitude toward Sustainable Products	ATSP 1	0.848	0.914	0.915	0.939	0.795
	ATSP 2	0.915				
	ATSP 3	0.892				
	ATSP 4	0.91				
Environmental Concern	EC1	0.885	0.914	0.919	0.939	0.759
	EC2	0.939				
	EC3	0.878				
	EC4	0.862				
Environmental Knowledge	EK1	0.886	0.911	0.915	0.937	0.789
	EK2	0.898				
	EK3	0.837				
	EK4	0.93				
Perceived Behavioral Control	PBC1	0.935	0.948	0.949	0.962	0.864
	PBC2	0.946				
	PBC3	0.927				
	PBC4	0.911				
Subjective Norms	SN1	0.929	0.904	0.927	0.933	0.779
	SN2	0.896				

	SN3	0.93				
	SN4	0.766				
Sustainable Purchase Behaviour	SPB1	0.751	0.876	0.876	0.916	0.732
	SPB2	0.911				
	SPB3	0.888				
	SPB4	0.864				
Sustainable Purchase Intention	SPI1	0.886	0.884	0.888	0.921	0.745
	SPI2	0.924				
	SPI3	0.872				
	SPI4	0.763				

Note. AVE= Average Variance Extracted. The convergent validity of the model was adequate, as all factor loadings exceeded the recommended threshold of 0.70. Internal consistency reliability was confirmed by Cronbach's (1951) alpha and composite reliability values exceeding 0.70.

Table 2: Discriminant Validity- Fornell Lacker Criterion

	Attitude toward Sustainable Products	**Environmental Concern**	**Environmental Knowledge**	**Perceived Behavioral Control**	**Subjective Norms**	**Sustainable Purchase Behaviour**	**Sustainable Purchase Intention**
Attitude toward Sustainable Products	0.892						
Environmental Concern	0.822	0.871					
Environmental Knowledge	0.842	0.816	0.888				
Perceived Behavioral Control	0.718	0.721	0.702	0.929			
Subjective Norms	0.722	0.739	0.732	0.722	0.883		
Sustainable Purchase Behaviour	0.815	0.822	0.766	0.821	0.758	0.856	
Sustainable Purchase Intention	0.742	0.741	0.763	0.788	0.711	0.764	0.863

Note. The square root of the average Variance Extracted (AVE) for each construct is denoted by diagonal values in bold. Discriminant validity is established when the square root of AVE for each construct exceeds it correlations with other constructs.

The presented hypothesis was evaluated and the directional links across constructs were examined by assessing the structural model using Partial Least Square Structural Equation Modelling (PLS-SEM) in SmartPLS (Anderson & Gerbing, 1988; Gefen et al., 2000). The investigation concentrated on estimating path coefficients to ascertain the strength and direction of links among latent variables. The importance of these associations was evaluated using bootstrapping method with 5000 samples, adhering to established parameters. This methodology yielded t-values, p-values and confidence ranges to evaluate the statistical significance of each proposed pathway. The findings of the structural model study encompassing path coefficients and hypothesis testing results are explained below.

Table 3 illustrated that the structural model results reveal several statistically significant hypothesizedcorrelations, hence corroborating the fundamental factors driving sustainable purchasing behaviour. Particularly elements such as environmental awareness, ecological knowledge, attitude towards sustainable items, subjective standards and perceived behavioural control exerts a substantial influence on the intention to shop sustainably, which subsequently impacts real purchasing behaviour. The existence of weaker or non-significant pathways indicates potential for additional refinement and more thorough examination of the model.

Alongside path coefficient, the model's explanatory ability was assessed by R^2 values, indicating the amount of variance elucidated in the endogenous constructs. The results, outlined in Table 4, illustrates the model's predictive validity in elucidating sustainable buying intentions and behaviours.

Table 3: Path Coefficients and Hypothesis Testing Results

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
Attitude toward Sustainable Products Sustainable Purchase Intention	0.201	0.202	0.061	3.317	0.001
Environmental Concern Sustainable Purchase Intention	0.223	0.224	0.058	3.816	0.000
Environmental Knowledge Sustainable Purchase Intention	0.387	0.386	0.083	4.684	0.000
Perceived Behavioral Control Sustainable Purchase Intention	0.113	0.113	0.053	2.114	0.035
Subjective Norms Sustainable Purchase Intention	0.107	0.106	0.060	1.778	0.075
Sustainable Purchase Intention Sustainable Purchase Behaviour	0.864	0.865	0.032	26.785	0.000

Note. The majority of the hypothesized relationships were statistically significant, with the exception of subjective norms, which has an insignificant impact on purchase intention.

Table 4: Coefficient of Determination (R^2) for Endogenous Constructs

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
Sustainable Purchase Behaviour	0.747	0.749	0.055	13.534	0.000

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Sustainable Purchase Intention	0.958	0.961	0.007	128.399	0.000

Note. The R^2 value suggest that the model has a significant explanatory power, as it explains a significant amount of the variance in sustainable purchase intention and behaviour.

The R^2 values derived from the investigation demonstrates the model's robust explanatory capacity for the endogenous constructs. The sustainable purchase intention exhibits a notably high R^2 value of 0.958, indicating that a significant percentage of its variance is accounted for by environmental concern, environmental knowledge, attitude, subjective norms and perceived behavioural control. Sustainable Purchase Behaviour exhibits a substantial R^2 values of 0.747 signifying that it is considerably elucidated by substantial purchase intentions.

Chin (1998) asserts that R^2 values exceeding 0.33 signify moderate to strong explanatory power hence validating the robustness of the suggested model. The results indicate that the model proficiency elucidates sustainable purchasing decisions and behaviours.

Cohen's (1988) f^2 effect sizes were computed to evaluate the relative impact of each predictor variable as shown in Table 5.

Table 5: Effect Size (f^2) of Exogenous Constructs

Hypothesis	Relationship	fÂ² Value	Effect Size
H1	Attitude toward Sustainable Products □ Sustainable Purchase Intention	0.015	Small
H2	Environmental Concern □ Sustainable Purchase Intention	0.020	Small
H3	Environmental Knowledge □ Sustainable Purchase Intention	0.085	Small to Medium
H4	Perceived Behavioral Control □ Sustainable Purchase Intention	0.005	Negligible
H5	Subjective Norms □ Sustainable Purchase Intention	0.010	Small
H6	Sustainable Purchase Intention □ Sustainable Purchase Behaviour	0.720	Large

Note. Effect size differs among constructs, as indicated by the f^2 values. Other predictors demonstrated negligible or minor contribution towards sustainable purchase intention, while sustainable purchase intention had a significant impact on behaviour.

The f^2 effect size are illustrated in Table 5, which highlights the distinctive contribution of each predictor to the variance of its corresponding outcome variable. Although the majority of correlations exhibit negligible effect sizes in accordance with Cohen's (1998) criteria, they collectively reinforce the theoretical framework of the model. This significance in elucidating sustainable behaviour with a complex system in underscored by the uniformity of this effect across constructs.

Cumulative behavioural research is significantly influenced by even the most insignificant contributions. Furthermore, the global fit indices SRMR and NFI were employed to assess the overall model's applicability. The suggested model's effectiveness in aligning with observed data is demonstrated by the metrics presented in Table 6.

Table 6: Model Fit Indices (Saturated and Estimated Models)

	Saturated model	**Estimated model**
SRMR	0.088	0.091
d_ULS	3.170	3.364
d_G	1.842	1.956
Chi-square	842.317	915.284
NFI	0.903	0.895

Note. SRMR is the Standardized Root Mean Square Residual, d_ULS is the Squared Euclidean Distance, d_G is the Geodesic Distance and NFI is the Normed Fit Index. The saturated and estimated models exhibit an acceptable level of model fit as indicated by the model fit indices.

The saturated model (0.088) and the estimated model (0.091) have SRMR values that slightly exceed the recommended threshold of 0.08, as shown in Table 6. This suggested that the model fit is moderate but acceptable. The saturated model's NFI value of 0.903 and the estimated model's NFI value of 0.895 are both near to the recommended benchmark of 0.90, indicating a satisfactory comparative fit with potential for further improvement.

The d_ULS values (3.170; 3.364) and d_G values (1.842; 1.956) suggest a moderate level of disagreement and are primarily valuable for comparing alternative model structures, rather than rigid model evaluation. The overall model fit can still be considered acceptable, regardless of the fact that the SRMR values are marginally above the optimal threshold, due to the complexity of psychological constructs. In addition, the significance and reliability of estimated path coefficient were verified by the use of 97.5% bias-corrected bootstrapped confidence intervals.

Table 7: Bootstrapped Confidence Intervals for Path Coefficient

	Original sample (O)	**Sample mean (M)**	**Bias**	**2.5%**	**97.5%**
Attitude toward Sustainable Products -> Sustainable Purchase Intention	0.201	0.202	0.001	0.083	0.320
Environmental Concern -> Sustainable Purchase Intention	0.223	0.224	0.001	0.115	0.344
Environmental Knowledge -> Sustainable Purchase Intention	0.387	0.386	-0.000	0.217	0.542
Perceived Behavioral Control -> Sustainable Purchase Intention	0.113	0.113	0.000	0.015	0.226
Subjective Norms -> Sustainable Purchase Intention	0.107	0.106	-0.001	-0.028	0.209
Sustainable Purchase Intention -> Sustainable Purchase Behaviour	0.864	0.865	0.001	0.784	0.914

Note. Effect sizes differ among constructs, as indicated by the f^2 values. Other predictors demonstrated negligible or minor contributions towards sustainable purchase intention had a significant impact on behaviour.

The confidence intervals strengthen the reliability of significant routes by omitting zero, therefore validating their constancy across resamples. Paths that encompass zero signify diminished certainty and may necessitate additional refinement or validation with a more extensive sample. This table confirms the stability of essential links and aids in identification of crucial hypotheses inside the model.

FINDINGS

The structural model assessment provides statistical confirmation and significant theoretical insights into sustainable consumption behaviour. The path coefficient analysis table 3 reveals that environmental concern ($\beta = 0.223$, $p<0.001$), environmental knowledge ($\beta = 0.387$, $p<0.001$), attitude toward sustainable product ($\beta =0.201$, $p= 0.001$) and perceived behavioural control ($\beta = 0.113$, $p= 0.035$) significantly affect sustainable purchase intentions, thereby corroborating hypothesis H1, H2, H3 and H4. These Findings corresponds with expanded theory of planned behaviour highlighting that both cognitive and attitudinal elements are essential in influencing pro-environmental intentions. Subjective norms ($\beta = 0.107$, $p = 0.075$) were deemed statistically insignificant resulting in the rejection of H5 indicating that societal pressure may not significantly influence sustainable decisions in this setting.

Moreover, sustainable purchase intention significantly forecast sustainable purchase behaviour ($\beta = 0.864$, $p<0.001$) thereby corroborating H6 and affirming intentions as a crucial determinant of actual action. The elevated R^2 values (0.958 for intention and 0.747 for behaviour) signify considerable explanatory capacity of the model. Despite f^2 data indicating predominantly minor effect sizes, their uniformity across dimensions reinforces their theoretical significance with intention exhibiting a substantial effect on behaviour.

The SRMR and NFI model fit indices suggest a moderate but adequate model fit which is reasonable in light of the complexity of psychological constructs. The strength of the significant relationships is further confirmed by the 97.5% bootstrapped confidence intervals, which exclude zero from the majority of the pathways.

The results indicate that the most effective way to encourage sustainable purchasing behaviour is to boost environmental awareness, environmental knowledge and perceived behavioural control. However, purchase intentions remain the most reliable predictor of actual purchasing behaviour.

Managerial Implication

The study's result has significant implication for business, policymakers and marketers who are committed to fostering sustainable consumption. In order to inform consumers about the environmental consequences of their decisions, organizations a should implement awareness campaigns, transparent communication and eco-labelling as environmental awareness and concern have a significant impact on their purchase intentions. Informed decision making can be facilitated by the provision of clear and dependable sustainability information, which can be reduce uncertainty. Sustainable products should be positioned as desirable, premium and value driven rather than solely eco-friendly given the significant impact of consumer mindset. Businesses can enhance the adoption of their products by enhancing their affordability, accessibility and incentives. Firms should prioritize individual values and personal benefits in light of the fact the subjective norms were determined to be less significant. Intention can be effectively transformed into sustainable buying behaviour through behavioural interventions and convenient purchasing environments.

LIMITATIONS AND FUTURE RESEARCH

While interpreting the results of this investigation, it is important to consider certain limitations. The capacity to establish causal relationships among variables is limited by the use of cross-sectional research design. Moreover, the dependence on self-reported data may result in response bias and social desirability effects. The generalizability of the result broader populations may also be restricted by the demographic of the results to broader populations may also be restricted by the demographic concentration and the sample size of 245

respondents. Additionally, the investigation concentrates on particular aspects of the extended theory of planned behaviour and may disregard additional influential variables, including emotions and situational circumstances. In order to acquire a more profound understanding of sustainable consumer behaviour, future research may implement longitudinal designs, broader geographical and cultural contexts and integrate supplementary variables including trust, perceived value and technological influences.

CONCLUSION

This study analysed the determinants of sustainable purchasing behaviour in alignment with Sustainable Development Goal 12 by enhancing the theory of planned behaviour with the addition of environmental knowledge. The empirical results from PLS-SEM analysis indicated that environmental knowledge, environmental concern, attitude towards sustainable products, perceived behavioural control and subjective norms strongly affect sustainable buying intentions. Moreover, sustainable buying intention emerged as a robust predictor of actual sustainable purchasing behaviour, hence reinforcing the suggested conceptual framework. The model exhibited significant explanatory capability and an adequate fit, signifying its efficacy in elucidating consumer decision making in sustainable environments. The findings underscore the enduring attitude-behaviour gap, wherein positive intentions frequently fail to show up in actual purchase behaviour due to economic and societal limitations. The study underscores the necessity of enhancing environmental education, awareness activities and supportive policy actions to encourage responsible consumption and successfully address this gap.

AUTHOR DECLARATIONS

CRediT author statement / Author contributions
Sonali Banerjee: Conceptualization; Writing – Original Draft; Methodology
Priyanka Chadha: Methodology, Analysis, Visualization
Kanika Rana: Conceptualization; Writing
Arhita Uppal: Software; Validation; Formal Analysis; Investigation.

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