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Shaping the Future with Innovation: Evaluating the Influence of Sustainable Packaging on Consumer Behaviour in E-Commerce

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ABSTRACT

Purpose: this study seeks to investigate the effect of sustainable packaging on consumer perception and its impact on purchase intention and buying behaviour within the e-commerce industry augmenting the Theory of Planned Behaviour with additional variables.

Design/ Methodology/Approach: A quantitative cross-sectional research approach was utilized, gathering data from 288 participants through a standardised questionnaire. The research employed Partial Least Square Structural Equation Modelling (PLS-SEM) via SmartPLS4 to evaluate the measurement and structural models. Concepts including consumer knowledge, consumer perception, environmental awareness, motivation, purchase intention and buying behaviour were examined.

Findings: The findings indicate that consumer knowledge, perception, environmental consciousness and motivation substantially affect purchase intention which subsequently exerts a large influence on buying behaviour. Environmental awareness appeared as the primary predictor. The model exhibited as the primary predictor. The model exhibited significant explanatory strength, validating the resilience of the suggested framework.

Implications/ Originality/ Value: The research offers significant insights for e-commerce companies to use sustainability packaging solutions and improve consumer engagement. This study enhances the literature by expanding the Theory of Planned Behaviour inside the realm of sustainability and provides practical implications for fostering eco-friendly consumption.



Keywords: Sustainable Packaging, Consumer Behaviour, Purchase Intention, E-commerce



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INTRODUCTION

Sustainability has evolved into an essential component influencing worldwide consumer behaviour, as growing environmental awareness impacts purchase decisions across various industries. Sustainable packaging is now recognised as an important component affecting consumer perceptions in the rapidly growing e-commerce sector. Sustainable packaging, incorporating recyclable, biodegradable and renewable materials, is vital for lowering the environmental impact caused by sustainable packaging waste (Sharma & Kaur, 2024). The rapid development of e-commerce has increased concern about excessive packaging, forcing businesses to employ environmentally sustainable packaging solutions to adhere to regulatory obligations and meet the evolving consumer demands (Carter & Eston, 2011).

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The e-commerce sector marked by frequent deliveries and substantial packaging utilization considerably contributes to worldwide trash production (Carter et al., 2020). The proliferation of internet shopping has become packaging waste a significant contributor to environmental degradation. Kwilinski (2023) asserts that packaging related trash may constitute as much as 30% of overall environmental affect of online retail activities. Consequently, numerous e-commerce enterprises are progressively adopting sustainable packaging solutions to mitigate environmental damage and meet consumer demand for eco-friendly activities (Zaidi et al., 2025).

Contemporary consumers exhibit heightened environmental awareness and anticipate that firms will engage in responsible practices such as implementing sustainable packaging (Sunita, 2023). Research indicates that consumer is inclined to pay premium for products featuring environmentally sustainable packaging (James & Kurian, 2021). Furthermore, sustainable packaging elevates company reputation and cultivates more robust consumer relationship (kiygi-Calli, 2019). Escursell et al. (2021) emphasize that these behaviours are significantly linked to enhanced perceptions of corporate social responsibility thereby bolstering trust and loyalty.

The association between sustainable packaging and consumer perception is complex and varied. Eco-friendly packaging indicates an organization's commitment to environmental responsibility and shapes consumer's perception of product quality, brand image and overall shopping experiences (Branca et al., 2024). Organizations employing sustainable packaging methods often notices improved consumer engagement, enhanced public image, and improved relationships with environmentally conscious customers (Jain & Hudnukar, 2022). Additionally, technological advancement have facilitated the production of innovative packaging options, especially biodegradable polymers and plant-based substances, thus enabling the evolution into sustainable packaging approaches (Morashti et al., 2022). However, this study aims to investigate the impact of sustainable packaging on consume perception, brand loyalty and the overall e-commerce experience.

LITERATURE REVIEW

Sustainable packaging has grown into an essential component of contemporary business practices, especially with regards to the e-commerce, as a result of the increasing concern for environmental sustainability. Packaging decisions are becoming an essential component in determining consumer perception and purchasing behaviour as a consequence of the growing environmental awareness of consumers. Carter et al. (2020) have determined sustainable packaging as essential domain of advancement in e-commerce, as it effects both environmental performance and consumer attitude with regards to brands. This refers to the use of environment friendly materials and practices which are intended to mitigate ecological impact. In these circumstances, the present literature review assesses the evolving function of sustainable packaging in impacting consumer perception, with particular emphasis on its impact on the e-commerce sector.

Sustainable Packaging

Sustainable packaging is the concept used to denote the development and design of solutions for packaging that lower down the environmental impact associated with entire lifecycle, ranging from production to disposal. It demonstrates the significance of encouraging reused materials and recyclability, minimizing pollutions and decreasing resource usage. The main goal is to ensure the safety and function ability of the goods while simultaneously lowering the ecological footprint related to packaging materials (Ibrahim et al., 2022). Recyclable plastics, recycled paper and paper-based fabrics constitute a number of the components that are essential in attaining these desired goals. Thus, to efficiently and effectively reduce environmental consequences, sustainable packaging shall be designed from a lifespan perspective, as advised by James and Kurian (2021). In same manner, Nordin and Selke (2010) underscore that sustainability is not, merely determined by the choosing of materials, but also by the emergence of packaging designs that are equally efficient and comply to safety standards thereby decreasing unneeded wastage. Furthermore, sustainable packaging methods have been boosted by enhancements in material sciences and technology, that have enhanced recyclability and reduced waste generation (Afif et al., 2022).

Sustainable Packaging and the E-commerce Industry

The e-commerce industry's substantial expansion has led to a major rise in packaging waste, which has increased notable environmental concern on a global level. However, the widespread application of single-use plastics and

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non-recyclable plastics has made packaging a significant factor contributing to worldwide waste generation, regardless the fact that e-commerce businesses rely largely on packaging for product safety, storage and branding (World Economic Forum, 2020). These environment effects can be efficiently reduced through the usage of sustainable packaging alternatives such as reuse, biodegradable and recyclable materials. These practices align with the growing consumer preference for environmentally responsible businesses, which subsequently boosts brand image and strengthens customer loyalty (Štofejová et al., 2023). Pervious research highlights that consumer are more prone to support companies that employ sustainable packaging initiatives, as these are correlated to more effective corporate social responsibility practices. High costs and operational complexities endure in preventing widespread adoption, regardless these benefits (Verghese et al., 2012). Therefore, it is crucial to preserve a formal commitment to continuous advancement in packaging technology in order to surpass these barriers.

Impact of Sustainable Packaging on Consumer Behaviour

Consumer behaviour is greatly impacted by sustainable packaging, that influences brand perception and purchasing decisions. Based on prior research, consumer is becoming more inclined to pay an additional price for products that are packaged in eco-friendly materials, which demonstrated a greater commitment to environmental sustainability (Kapse et al., 2023). This development is currently driven by the growing understanding of environmental issues and the growing desire to reduce the ecological footprints of individuals (Ghaffar et al., 2023). Wandosell et al. (2021) revealed that consumers usually support organizations that show strong environmental responsibility, notably through the formal adoption of sustainable packaging practices. Perceived product quality is also improved by sustainable packaging, as consumers regularly associate eco-friendly packaging with responsible manufacturing practices and higher standards (Reddy et al., 2023). This perception is particularly noticeable among environmentally conscious consumers who tend to be younger. Moreover, organizations that are integrating sustainability into their overall organizational goals (C. Dominic, 2021) and are increasing logistics by utilizing minimum packaging designs and refillable packaging solutions to lower down waste (Scott & Vigar-Ellis, 2014).

New Alternatives available for packaging

Recyclable Bubble Wrap: Recyclable bubble wrap is recognized as an environmentally sustainable alternative for traditional plastic cushioning materials, creating eco-friendly packaging solutions. Three main varieties of recyclable bubble wrap are often used. Firstly, corrugated bubble wrap is composed from recycled corrugated sheets, which are then reused as protective cushioning and subsequently transformed into transportation boxes. This material is eco-friendly, compostable and wholly recyclable (C.A.S Dominic et al., 2015). Secondly, Green Wrap is made up of a two-layer structure, within an inner layer of white tissue and outer layer that is available in either brown or white. It is recyclable and operates similarly to ordinary bubble wrap, while also providing a smooth textured appearance (Asim et al., 2022). Third, indented kraft paper distinguished by its ridged and irregular textures, provides robust protection for items need minimal padding. While not as flexible as greenwrap, it continuous to serve as an efficient and recyclable packaging alternative (KESKIN, 2020).

Biodegradable Packaging: Biodegradable packaging peanuts are made from non-toxic materials derived from natural so0urces, such as corn and wheat starch. These packaging peanuts are very water-soluble and can be disposed of in compost piles after one use. These are employed to protect delicate goods, including tableware, glassware and other fragile artifacts. They are designed to occupy the excess space within the containers to protect the merchandise during transit, shipment and reallocation. These biodegradable packaging peanuts are recyclable and eco-friendly (Cooke, 2016).

Seaweed Packaging: The container is edible and can be ingested with the product. Seaweed packaging is rich in minerals, vitamins, fibres and other advantageous components. The use of this bundle does not result in any adverse effects on customers rather it produces beneficial benefits. If the client opts not to utilize Seaweed packaging it can be dissolved in water, as it is wholly biodegradable (Lomartire et al., 2022).

Mushroom Packaging: Mushroom packaging comprises agricultural byproducts and mycelium. The conventional plastic container previously utilized for packaging has been replaced. The mushroom packaging is entirely biodegradable and highly recyclable presenting no negative environmental impact (Kim & Ruedy, 2023).

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Proposed Framework

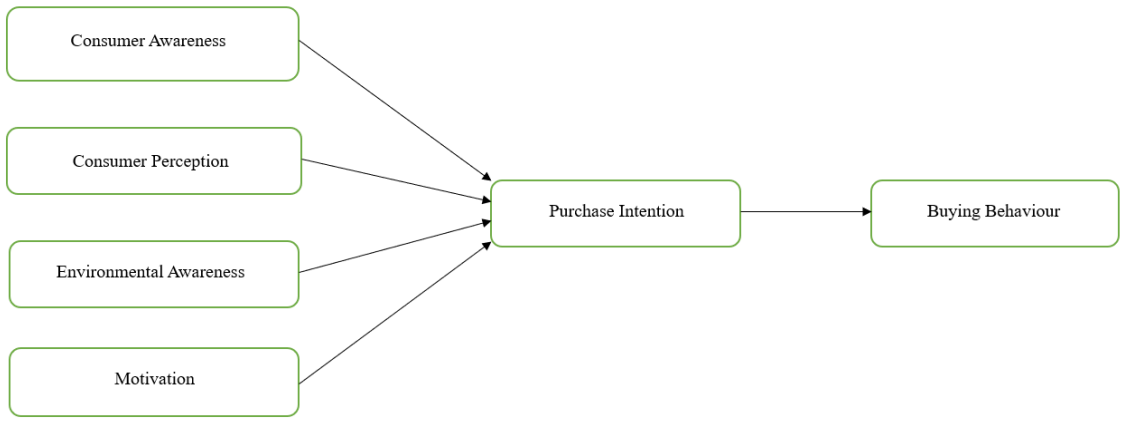

Figure 1: Proposed Framework

The components that impact purchasing patterns among consumers in regards to sustainable products are analysed in this proposed framework. Purchase intention is significantly determined by four independent variables which are consumer awareness, consumer perception, environmental awareness and motivation (Joshi & Rahman, 2015). Consumer awareness is defined as the extend to which consumer receive information about the features, benefits and sustainability of products. Consumer perception is an indicator of the manner according to which consumer evaluate and analyse the quality, reliability and value of sustainable products. Environmental awareness is the indicator of consumer's concern for sustainability and environmental stewardship, which ultimately in return pushes them to make eco-friendly purchasing decisions (Asih et al, 2020). The internal or external motivations that stimulate consumers to engage in sustainable consumption practices can be referred to as motivation. Purchase intention is significantly affected by these components which act as a mediating variable between consumer-related factors and actual purchasing behaviour. The possibility of consumers converting intention into actual purchasing behaviour is higher when individual develop a strong intention to purchase sustainable products. Therefore, the framework indicates that sustainable purchasing decisions and responsible consumer behaviour are significantly affected by positive awareness, perception, environmental concern and motivation (Zhuang et al., 2021).

HYPOTHESIS

The proposed hypotheses for the conceptual model that was demonstrated were given below:

H1: CA (Consumer Awareness) has significant influence on PI (Purchase Intention).

H2: CP (Consumer Perception) has significant influence on PI (Purchase Intention).

H3: EA (Environmental Awareness) has significant influence on PI (Purchase Intention).

H4: MOT (Motivation) has significant influence on PI (Purchase Intention).

H5: PI (Purchase Intention) has significant influence on BB (Buying Behaviour).

RESEARCH METHODOLOGY

This research paper utilized a quantitative cross-sectional methodology to analyse the impact of sustainable packaging on consumer perception and purchasing behaviour in the e-commerce sector. A structures questionnaire was used to collect data from 287 respondents. This questionnaire was circulated through academic network and online platforms to ensure a wider reach and non-probability convenience sampling techniques was employed. Respondents were selected based upon their awareness and understanding of sustainable practices and their experience with online purchasing.

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SmartPLS software was used to evaluate the proposed framework using PLS-SEM (Partial Least Square Structural Equation Modelling). This method is enabled of both the structural relationships and measurement outcomes among the study variables. Consumer awareness, consumer perception, environmental awareness, motivation, purchase intention and purchasing behaviour, and also demographic factors such as age, gender, education and income were the key constructs examined in the current study.

All constructs were evaluated using multi-item methods that were utilized previously in the research. Responses have been recorded on a five-point Likert scale that ranged from strongly disagree to strongly agree. In order to verify internal consistency and convergent validity, the measurement model's reliability and validity were analysed using Cronbach's Alpha, composite reliability and average variance extracted (AVE). the structural model was further investigated to evaluate the proposed relationships and discover the impact of sustainable packaging on consumer purchase related outcome in e-commerce.

DATA ANALYSIS AND FINDINGS

Assessment of Measurement Model

Reliability study was conducted using SPSS employing Cronbach's Alpha to assess the internal consistency of all constructs so assuring adequate reliability before executing structural modeling in SmartPLS as advised by Hair et al. (2019). All measurement items factor loadings surpassed the recommended level of 0.60 signifyingsufficient indication reliability. Construct reliability was additionally evaluated by Cronbach's Alpha and Composite Reliability (CR) with all values exceeding the acceptable threshold of 0.70 thereby affirming robust internal consistency,

Convergent validity was assessed by the Average Variance Extracted (AVE) with all constructs yielding values exceeding 0.50 indicating that the indicators adequately represent their respective constructs. Table 1 present the results of the confirmatory factor analysis to assess the reliability and convergent validity of the measurement model.

Additionally, the Fornell-Lacker Criterion is utilized to assess the discriminant validity, as demonstrated by Table 2. Each construct's square root of the Average Variance Extracted (AVE) is denoted by the diagonal values, which are greater than correlation with other constructs. For instance, Consumer Awareness (0.871) exhibits a higher correlation with all other variables. Adequate discriminant validity has been proven by the similar results observed for the remaining constructs. This indicates that each construct is unique and measure a distinct concept, with minimal overlap with other constructs.

Table 1: Confirmatory Factor Analysis

Constructs	Items	Loading	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average variance extracted (AVE)
Consumer Awareness	CA1	0.858	0.898	0.902	0.926	0.758
	CA2	0.884				
	CA3	0.869				
	CA4	0.836				
Consumer Perception	CP1	0.908	0.915	0.919	0.938	0.796
	CP2	0.931				
	CP3	0.881				
	CP4	0.864				
Environmental Awareness	EA1	0.876	0.904	0.908	0.932	0.776
	EA2	0.898				
	EA3	0.858				
	EA4	0.885				

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Motivation	MOT1 MOT2 MOT3 MOT4	0.918 0.935 0.901 0.886	0.929	0.933	0.948	0.823
Purchase Intention	PI1 PI2 PI3 PI4	0.883 0.914 0.868 0.839	0.892	0.896	0.925	0.756
Buying Behaviour	BB1 BB2 BB3 BB4	0.861 0.899 0.874 0.818	0.885	0.889	0.919	0.741

Note. All factor loadings exceeded the recommended threshold of 0.70, indicating satisfactory indicator reliability. Cronbach's Alpha, composite reliability and AVE values met the acceptable criteria for reliability and convergent validity.

Table 2: Discriminant Validity- Fornell Lacker Criterion

Constructs	**Consumer Awareness (CA)**	**Consumer Perception (CP)**	**Environmental Awareness (EA)**	**Motivation (MOT)**	**Purchase Intention (PI)**	**Buying Behaviour (BB)**
Consumer Awareness (CA)	0.871					
Consumer Perception (CP)	0.798	0.892				
Environmental Awareness (EA)	0.779	0.815	0.881			
Motivation (MOT)	0.735	0.761	0.746	0.907		
Purchase Intention (PI)	0.791	0.826	0.804	0.838	0.869	
Buying Behaviour (BB)	0.714	0.748	0.731	0.774	0.821	0.861

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 structural model was investigated using Partial Least Square Structural Equation Modelling (PLS-SEM) to assess the presented hypothesis and investigate the directional links among the constructs. The first phase entailed estimating the route coefficient which signify the strength and direction of links among the latent variables. These coefficients elucidate the degree to which one construct impacts another inside the model. The statistical significance of these association was evaluated using the bootstrapping technique, which used 5000 subsamples from a dataset of 288 respondents. This method improves the robustness and dependability of the results by producing standard errors and t-value, facilitating accurate hypothesis testing and validation of the suggested research framework.

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Table 3: Path Coefficients and Hypothesis Testing Results

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Original sample (O)	Sample mean (M)
H1	CA → PI	0.232	0.233	0.063	3.683	0.000	Supported
H2	CP → PI	0.269	0.268	0.058	4.638	0.000	Supported
H3	EA → PI	0.334	0.333	0.071	4.704	0.000	Supported
H4	MOT → PI	0.161	0.162	0.060	2.683	0.007	Supported
H5	PI → BB	0.804	0.805	0.037	21.730	0.000	Supported

Note: CA= Consumer Awareness; CP= Consumer Perception; EA= Environmental Awareness; MOT= Motivation; PI= Purchase Intention; BB= Buying Behaviour. Hypothesis was deemed to be supported when the p-value was less than 0.05.

Table 3 presents the structural model results and hypothesis testing outcomes. The finding underscores the crucial influence of consumer awareness, perception, environmental consciousness and motivation on purchase intention which subsequently exerts a powerful impact on actual buying behaviour.

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

Endogenous Constructs	**Original sample (O)**	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
Buying Behaviour	0.684	0.687	0.059	11.593	0.000
Purchase Intention	0.842	0.845	0.011	76.545	0.000

Note: The explanatory power of the endogenous constructs in the structural model is denoted by R^2 values. The predictive accuracy of the model is characterized by higher R^2 values.

The explanatory power of the structural model was analysed using the coefficient of determination (R^2), which highlights the percentage of variance in each endogenous constructs that can be accounted for by its predictor variables, in addition to individual path estimates.

R^2 levels ranging from 0.19 to 0.33 are deemed moderate but values about 0.13 or below are classified as weak, according to Chin (1998). The coefficient of determination (R^2) values for the endogenous constructs are presented in Table 4. Consumer Awareness, Consumer Perception, Environmental Awareness and Motivation collectively account for 84.2% of the variance in Purchase Intention, as evidenced by R^2 values of 0.842. this indicates that the model has a significant predictive capacity. In the same direction, the R^2 value for Buying Behaviour is 0.684, indicating that Purchase Intention accounts for 68.4% of the variance in Buying Behaviour. The proposed model has substantial explanatory capability, as both R^2 value are considered robust. The elevated R^2 values affirm the model's resilience and substantial predictive capacity.

Cohen's (1998) f^2 effect sizes were calculated to evaluate the relative contribution of each exogenous construct to the explained variance. These values elucidate the specific influence of predictors on endogenous variables facilitating the identification of the most significant aspects inside the model. Tabel 5 displays the outcomes.

Table 5: Effect Size (f^2)

Hypothesis	Relationship	f^2 Value	Effect Size
H1	CA → PI	0.026	Small
H2	CP → PI	0.039	Small
H3	EA → PI	0.098	Small to Medium
H4	MOT → PI	0.017	Small
H5	PI → BB	0.612	Large

Note. CA= Consumer Awareness; CP= Consumer Perception; EA= Environmental Awareness; MOT= Motivation; PI= Purchase Intention; BB= Buying Behaviour. Cohen's guidelines were employed to interpret effect size: 0.02 was classified as small, 0.15 as medium and 0.35 as large.

Table 5 illustrates the effect size (f^2) values, which indicate the unique contribution of each predictor to the variance of its corresponding endogenous construct. Despite the fact that majority of correlation have negligible effect sizes (Cohen's criteria: 0.02= small, 0.15= medium, 0.35= large), they collectively strengthen the theoretical framework of the model. The value of these effects in clarifying purchasing intentions is underscored by their persistent significance across dimensions. Environmental awareness has comparatively greater impact than other predictors, despite the fact that purchase intention has a significant impact on buying behaviour. The cumulative impact of even small effect size is essential in complex behavioural models as it significantly improves the overall explanatory power.

Moreover, the comprehensive model fit was analysed using global fit indices, such as the SRMR (Standardised Root Mean Square Residual) and NFI (Normed Fit Index). Table 6 presents the model fit indices for both the saturated and estimated models.

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

Model Fit Indices	Saturated Model	Estimated Model
SRMR	0.078	0.081
d_ULS	2.845	2.996
d_G	1.702	1.821
Chi-square	765.328	834.917
NFI	0.918	0.907

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 SRMR values for the saturated (0.078) and estimated models (0.081) are in close range to the traditional threshold of 0.08, highlighting a satisfactory, although slightly low, model fit. An adequate level of comparative model fit is illustrated by the NFI values (0.918 and 0.907), which exceed the required threshold of 0.90. regardless of the possibility of minor discrepancies, these values are considered adequate, particularly in explanatory research that involves complex behavioural components. Additionally, the d_ULS and d_G values, in spite of not being associated with the strict criteria, are valuable benchmarks for evaluating the model's fit and identifying protentional future enhancement in the model's definition.

The model exhibits an adequate given intricacy of the interaction analysed. To enhance the validation of the structural model's resilience, 95% bias corrected bootstrapped confidence intervals were computed for each path coefficient as illustrated in Table 7.

Table 7: Bootstrapped Confidence Intervals for Path Coefficient

	Original sample (O)	Sample mean (M)	Bias	2.5%	97.5%
CA → PI	0.232	0.233	0.001	0.109	0.348
CP → PI	0.269	0.268	-0.001	0.142	0.384

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EA → PI	0.334	0.333	-0.001	0.192	0.472
MOT → PI	0.161	0.162	0.001	0.038	0.276
PI → BB	0.804	0.805	0.001	0.721	0.872

Note. CA= Consumer Awareness; CP= Consumer Perception; EA= Environmental Awareness; MOT= Motivation; PI= Purchase Intention; BB= Buying Behaviour. The significance and stability of estimated path coefficient are indicated by the bootstrapped confidence intervals.

These intervals assist in ascertaining whether the estimated effects are statistically distinct from zero. All confidence intervals exclude 0, so affirming the relevance and durability of the proposed correlations. The minimal bias values enhance the credibility of the findings reinforcing the validity of the suggested model.

DISCUSSION

The structural model assessment provides empirical validation and theoretical insights enhancing the robust measurement model. The path analysis (Table 3) indicates that Consumer Awareness (CA), Consumer Perception (CP), Environmental Awareness (EA) and Motivation (MOT) substantially affect Purchase Intention (PI), corroborating hypothesis H1-H4. Among these Environmental Awareness ($\beta = 0.334$, $p < 0.001$) has the most significant impact, suggesting that environmental conscious consumers are most predisposed to sustainable purchasing. This discovery substantiates the Extended Theory of Planned Behaviour wherein awareness and values profoundly influence behavioural intentions.

Consumer Perception ($\beta = 0.269$, $p < 0.001$) and Consumer Awareness ($\beta = 0.232$, $p < 0.001$) demonstrate significant contributions indicating that both understanding and favourable assessment of sustainable packaging augment purchase intention. The role of both intrinsic and extrinsic motivational factors in encouraging sustainable purchasing decisions is further illustrated by the fact that motivation, irrespective of its comparatively lower influence ($\beta = 0.16$, $p = 0.007$), continues statistically significant.

Moreover, the strong and significant impact of Purchase Intention on Buying Behaviour ($\beta = 0.804$, $p<0.001$) support H5 and affirms the significant role of intention in the development of favourable attitude into actual purchasing behaviour. The model's strong ability to predict is illustrated by the R^2 values, that indicate substantial explanatory power. Thus, 84.2% of the variance in Purchase Intention and 68.4% of the variance in buying behaviour is can be determined by the model.

The size of effect analysis demonstrates that, regardless the fact that the vast majority of predictors have relatively minor individual effect, their collective contribution to the model is substantial. Environmental awareness exhibits a relatively stronger influence among the predictor, while purchase intention has substantial effect on buying behaviour. Moreover, the model fit indices such as SRMR and NFI, suggest an adequate model fit, which is in compliance with the standards of explanatory PLS-SEM research.

The results suggest that sustainable packaging has a significant impact on consumer behaviour by impacting awareness, perception and motivation. The e-commerce sector is more likely to foster responsible and sustainable buying behaviour when consumer possess an increased degree environmental awareness and knowledge as they are more likely to establish better purchase intention.

MANAGERIAL IMPLICATIONS

The findings of this paper have substantial implications for e-commerce businesses as well as advertisers who attempt to encourage sustainable consumption practices. Organisations should focus on the adoption of sustainable packaging solutions as consumer's awareness and perceptions sustainably impact their purchase intentions. Effective interactions and labelling may strengthen positive perceptions and boost consumer trust in the brand by presenting clear information regarding the ecological benefits of sustainable packaging.

Sustainability should be incorporated into the main marketing approaches of organizations, rather than considered as a secondary initiative as environmental awareness has become a significant determinant. Moreover, sustainable purchasing behaviour can be encouraged by increasing consumer motivation through benefits such as eco-

certification, reward programs and discounts. Marketers should emphasize the formalization of positive intentions into measurable actions by assuring product accessibility, reasonable pricing and convenience as demonstratedby the substantial correlation between purchase intention and actual purchasing behaviour. In the fast-growing e-commerce sector, organisations that align their packaging strategies with sustainable and environmental values can establish stronger customer relationships, boost brand reputation and attain a competitive advantage.

LIMITATION

While summarising the findings of this study, it is significant to look at certain limitations. Determining causal relationships among variables is limited by the cross-sectional research design. Moreover, the data were collected using a non-probability sampling techniques, which may restrict the applicability of the results beyond theselected sample. This research also relies on self-reported responses which may be determined by social desirability bias and response bias. However, the investigation emphasizes specific psychological variables, while disregarding additional potential determinants, including cultural influence, price sensitivity and product availability. Finally, the study is limited to the e-commerce context and as a result, the results may not be strictly applicable to offline retail environmental or other industrial sectors.

CONCLUSION

The findings of this research indicate that sustainable packaging has a substantial influence on the purchasing behaviour and perception of consumers in the e-commerce sector. The results indicate that consumer awareness, perception, environmental concern and motivation all have positive influence on purchase intention, which in turn has a significant effect on actual purchasing behaviour. Environmental awareness was the most significant predictor among these actors underscoring the increasing significance of sustainability in the decision-making processes of consumers. The proposed framework's applicability is also confirmed by the study. Moreover, the findings indicate that businesses can foster responsible purchasing behaviour, enhance brand reputation and reinforce consumer trust by implementing eco-friendly packaging strategies. Consequently, thus can contributeto both business growth and environmental sustainability.

AUTHOR DECLARATIONS

CRediT Author Statement / Author contributions

Sonali P. Banerjee: She provided academic supervision, refined the research design and methodology, validated analytical procedures, reviewed interpretations and ensured the scholarly quality, consistency and rigor of the study and manuscript.

Priyanka Chadha: She reviewed the manuscript for clarity, structure and publication compliance, enhanced theoretical and managerial relevance and contributed to final editing, proofreading and refinement prior to submission.

Kanika Rana: She developed the study's framework and conceptualized research problem. She designed the research methodology, collected survey data and conducted statistical analysis using SEM technique. She also drafted the manuscript and coordinated the overall research process related to sustainable purchase intention and buying behaviour towards sustainable products.

Arhita Uppal: She developed the theoretical foundation and literature review, contextualized the study within sustainable packaging and consumer behaviour literature and strengthen the discussion, implication and academic relevance of the findings.

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