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Original Research Article

Plastic Waste to Green Economy through Green Products and Green Packaging on Consumer Purchase Decisions of Micro Small Medium Enterprises in East Java Tourism

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ABSTRACT

Green packaging has emerged as a viable strategy to promote environmental responsibility and improve the quality of life. This study examines the impact of Green Products and Green Packaging on purchase decisions, as well as their direct and indirect effects on the Green Economy. Data were collected through questionnaires, observations, and interviews involving micro, small, and medium enterprises in East Java's tourism sector, as well as local consumers. Structural Equation Modelling was employed for analysis. The results show that environmentally friendly products and environmentally friendly packaging significantly increase consumer purchase decisions, which subsequently strengthen green economic outcomes. Both variables also demonstrate positive direct effects on green economic development, while purchase decisions function as a partial mediator. The model demonstrates strong explanatory power, supporting the notion that sustainable product attributes influence consumer behaviour. These findings underscore the significance of sustainable consumer behaviour and provide strategic insights for micro, small, and medium enterprises to enhance eco-branding and accelerate green economic transitions.

KEYWORDS

Green products, Green packaging, Purchase decision, Green economy, Sustainable consumption, Micro small medium enterprises.

INTRODUCTION

The rapid economic development, supported by technological advances, has led to unsustainable production and consumption patterns that negatively impact the environment. Common environmental issues include climate change, water pollution, and air pollution, which have garnered significant attention worldwide [1]. The production and sale of green products have become a primary focus for companies [2], and such products are increasingly

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recognised by society and consumers because they are often associated with solutions to environmental degradation caused by industry [3].

Despite growing global awareness of the importance of environmental conservation, Indonesia remains the second-largest waste producer after China [4]. More than 17,000 tons of waste, originating from households, SMEs, industries, and hospitals, are generated in Indonesia each year, and only 66.12% of it is properly managed [5]. Awareness of environmental conservation is driven by concerns about the potential for environmental disasters [6]. When environmental disasters occur, they impact the lives of future generations [7] and pose a significant threat to human survival [8]. While SMEs in Indonesia are able to adapt to technological and market changes, the implementation of environmentally responsible practices, particularly in packaging, remains inconsistent [9]. The underlying knowledge gap highlights the pressing need to understand how environmentally friendly practices in SMEs can influence consumer behaviour and accelerate the transition to a green economy.

Carbon emissions have been shown to decrease through eco-friendly practices that utilise energy-efficient methods. Green packaging practices, such as the use of green products and sustainable packaging materials, rely on renewable resources like bamboo, wood, and bioplastics. When used by SMEs, such practices not only influence consumer behaviour but also contribute to reducing carbon emissions, especially if supported by advanced, energy-efficient technologies designed to prevent environmental pollution.

The development of SMEs is evident in their packaging and marketing strategies. SMEs currently employ a range of traditional to modern marketing strategies and consider environmentally friendly marketing [10]. Previous research has shown that traditional marketing and sales strategies can have a negative impact on the environment, while current business practices are increasingly acknowledging environmental concerns [11]. Increased awareness of environmental issues in business practices is reflected in the application of the green economy concept [12]. The green economy refers to the integration of social factors, such as human behaviour, and environmental considerations within economic processes to achieve sustainable development [13]. The green economic model focuses on sustainable resource utilisation and management [14]. There is evidence in previous research that green economy strategies in marketing and sales improve social welfare [15]. Furthermore, the green economy also significantly impacts environmental risk reduction [16]. By contributing to the responsible use of natural capital through pollution prevention and reduction measures, it creates opportunities for social well-being and promotes sustainable development through consumer purchasing decisions [12].

According to the Theory of Planned Behaviour (TPB), consumer purchase decisions are influenced by behavioural beliefs (perceptions of environmental benefits) and normative beliefs (social expectations). Consumer beliefs, considered together, shape attitudes, subjective norms, and intentions that lead to actual behaviour [17]. Green products and green packaging serve as stimuli that influence these beliefs, making them critical drivers of environmentally conscious purchasing. Simultaneously, the green economy framework emphasises sustainable resource use, pollution prevention, and the creation of social welfare through eco-innovation [16]. In this conceptual integration, purchase decisions act as a mediating mechanism, linking environmentally friendly practices to broader economic and sustainability outcomes [17]. Thus, when consumers choose green products that are packaged sustainably, they not only express their individual preferences but also contribute to systemic transitions toward green economic growth [18]. However, many investigations conducted in this problem area are limited to intentions rather than actual purchase decisions and rarely connect consumer behaviour with broader economic outcomes [19]. Research that simultaneously considers the impact of green products and green packaging on consumer purchase decisions, and how these decisions contribute to strengthening the green economy, remains underexplored. This gap provides the starting point for the present study.

Therefore, this research specifically investigates the impact of green products and green packaging on consumer purchase decisions and their subsequent influence on the green economy. Using a mixed method approach involving surveys, interviews, and observations with SMEs and consumers in East Java's tourism sector, the study employs Structural Equation Modelling (SEM) to capture both direct and indirect effects. This methodological design allows for a robust analysis that integrates behavioural, economic, and sustainability dimensions.

The value of this manuscript lies in its theoretical contribution to bridging consumer behaviour theories with green economy frameworks, and its practical contribution to offering strategic insights for SMEs and policymakers. By clarifying the mediating role of consumer purchase decisions, the study advances knowledge on how sustainable business practices can reduce plastic waste, strengthen eco-friendly branding, and accelerate the transition to a green economy in emerging markets.

LITERATURE REVIEW

Packaging is a crucial component of product design, serving as a marketing tool [20]. Additionally, packaging can also influence consumer perceptions of environmental responsibility. The food industry is one of the most significant contributors to environmental pollution due to the intensive use of plastic packaging [21]. Findings from previous studies indicate that packaging waste contributes a considerable portion of the non-biodegradable waste stream, exacerbating global ecological concerns [22]. Addressing this issue requires regulatory intervention and business-driven innovation to reduce waste and encourage circular economy practices [23]. In this context, the transition to green packaging and green product design is essential to promote sustainable development.

Green products are designed to minimise environmental impact by using environmentally friendly and recyclable materials. Furthermore, green products play a positive role in encouraging environmentally friendly consumption. Previous findings suggest that limited environmental awareness and high prices are significant barriers to the adoption of green products. Furthermore, consumer knowledge and environmental attitudes directly shape purchasing behaviour for environmentally friendly products, but the transformation from positive attitudes to actual behaviour is inconsistent. This situation suggests that while environmentally friendly product attributes can increase purchase intentions, they do not guarantee actual purchase decisions.

Green packaging has become a key focus in influencing consumer perceptions of product sustainability, as it positively impacts purchase intentions, particularly in online-to-offline commerce. Furthermore, previous research suggests that consumers consider both aesthetic and functional aspects when making purchasing decisions. Green packaging is often perceived as less attractive, less durable, or more expensive than conventional packaging. This observation aligns with previous research, which suggests that recent advances in material innovation, such as bamboo fibre, bioplastics, and smart biodegradable composites, offer solutions but also highlight the cost and scalability issues faced by SMEs. Therefore, further critical evaluation of how green packaging can address these limitations while maintaining consumer appeal is warranted.

Complementing the Theory of Planned Behaviour, the Theory of Green Consumerism emphasises the ethical and ecological dimensions of consumption, suggesting that environmentally conscious consumers integrate personal values with product choices to achieve environmental and social well-being [24]. Together, these frameworks provide a conceptual basis for linking product attributes to broader economic and environmental outcomes.

Purchasing decisions play a role in linking green products and green packaging to the sustainable economic transition. While previous research often focused on purchase intentions,

few studies have explored actual purchasing decisions as predictors of systemic change. Previous findings suggest a gap between intentions and behaviour, posing challenges to green products and green packaging.

In this context, decision-making is crucial for mediating the relationship between consumer attitudes and behaviours [25]. Research has shown that purchase decisions are a practical predictor of actual behaviour, often more so than attitudes alone [26]. Specifically, the decision to purchase environmentally friendly products has been identified as a significant predictor of sustainable purchasing behaviours [27]. Thus, understanding how consumer decisions are influenced by green products and green packaging is vital for producers [28].

Green products, which have a positive impact on the environment, are increasingly promoted through green marketing strategies. These strategies include offering a variety of organic products to consumers. Green products are characterised by three key indicators: (1) product perception, which is essential for shaping consumer views and encouraging purchases of green products; (2) packaging, which must be recyclable and non-damaging to the environment; and (3) composition, where materials used should be resource efficient, non-harmful to health or the environment, and environmentally friendly [29]. Accordingly, this study examines the variables of Green Product (GP), Green Packaging (PC), Purchase Decision (PD), and Green Economy (GE).

Table 1. Development of research variable indicators of green products

No.	Code	Green Product (GP)	Source
1	GP1	Producing goods in environmentally friendly packaging (green packaging)	[30]
2	GP2	Producing goods with reusable packaging	[31]
3	GP3	Selling products with green packaging at a higher price	[32]
4	GP4	Creating products with green packaging results in more efficient costs and lower production expenses.	[33]
5	GP5	Using green packaging speeds up production time.	[34]
6	GP6	Products with green packaging significantly help reduce negative impacts on the environment and human health.	[28]
7	GP7	Products with green packaging are reasonably priced for consumers.	[35]
8	GP8	Products with green packaging tend to have a shorter lifespan.	[36]
9	GP9	There are limited product choices available with green packaging.	[37]
10	GP10	It is crucial to educate other SMEs to produce products with green packaging to avoid plastic waste.	[38]

Table 1 presents the development of research variable indicators for Green Product (GP), which collectively capture the multidimensional aspects of sustainable production, market positioning, and consumer accessibility. In addition, **Table 2** outlines the development of research variable indicators related to Green Packaging (PC), consisting of twelve measurable items, and **Table 3** presents the development of research variable indicators for Purchase Decision (PD), which consists of ten key items capturing consumer behaviour in relation to green packaging.

Table 2. Development of research variable indicators of green packaging

No.	Code	Green Packaging (PC)	Source
1	PC1	Using green packaging is highly beneficial for significantly reducing plastic waste.	[39]
2	PC2	Products with locally sourced green packaging materials have high quality.	[40]
3	PC3	Using recycled materials for green packaging is a very attractive option.	[41]
4	PC4	Educating others to produce items that serve as green packaging is very important.	[42]
5	PC5	Repurposing used items to create crafts for green packaging is very appealing.	[43]
6	PC6	There is support from leading environmental organisations for products with green packaging.	[44]
7	PC7	The design of green packaging tends to be less attractive.	[43]
8	PC8	Raw materials for producing green packaging are cheaper.	[45]
9	PC9	Obtaining raw materials for producing green packaging can be difficult.	[45]
10	PC10	Many people are indifferent to creating products with easily recyclable packaging.	[46]
11	PC11	New competitors innovating in green packaging products are emerging.	[47]
12	PC12	Many competitors offer more innovative green packaging products.	[48]

Table 3. Development of research variable indicators of the purchase decision

No	Code	Purchase Decision (PD)	Source
1	PD1	Increasing environmental awareness makes green packaging an attractive choice.	[49]
2	PD2	Products with green packaging tend to sell less.	[50]
3	PD3	Products with green packaging are often less visually appealing to buyers.	[51]
4	PD4	Products with green packaging are not well known in the market, leading to lower sales.	[52]
5	PD5	Consumers do not yet trust the quality of green packaging.	[53]
6	PD6	Products with green packaging are generally more expensive due to the cost of the materials used for packaging.	[54]
7	PD7	Environmentally friendly packaging does not stack well, complicating storage.	[55]
8	PD8	Consumers prefer products with recycled cardboard green packaging due to its environmental benefits.	[56]
9	PD9	Many people lack high knowledge and awareness about environmental conservation.	[57]
10	PD10	Consumer attitudes towards green packaging products are inconsistent.	[53]

Finally, **Table 4** summarises the development of research variable indicators for the Green Economy (GE), presenting ten indicators that demonstrate how green packaging contributes to economic transformation and sustainability outcomes.

Table 4. Development of research variable indicators of the green economy

No.	Code	Green Economy (GE)	Source
1	GE1	Green packaging can enhance the branding/image of an industry.	**[58]**
2	GE2	Businesses using green packaging can attract international market attention with innovative products.	**[52]**
3	GE3	There is increasing support for products with green packaging.	**[49]**
4	GE4	Several new developments support more efficient production of green packaging.	**[59]**
5	GE5	Products using green packaging have many opportunities for grants and assistance from government and non-governmental organisations.	**[33]**
6	GE6	Green packaging serves as an attractive branding tool, making products easier to sell to domestic and international tourists.	**[60]**
7	GE7	Products with green packaging have significant potential for export at a higher value.	**[61]**
8	GE8	Opens numerous collaborations with other SMEs that also produce green packaging to enhance branding further.	**[62]**
9	GE9	Products with green packaging are highly profitable due to limited competition.	**[49]**
10	GE10	Products with green packaging still have high export potential due to limited production.	**[63]**

METHOD

This section outlines the research methodology, which includes the research design, identification of the studied population and sample, and statistical analysis.

Research Design

This study employs a mixed methods approach, incorporating both quantitative and qualitative research methods. It is supported by primary data collected through the distribution of questionnaires to consumers and SMEs (Small and Medium Enterprises), supplemented by observations and interviews **[64]**. A non-probability sampling technique was employed because it is suitable for implementation if members of the studied population do not have an equal chance of being selected as a sample **[65]**. In this research, sample selection is based on specific characteristics, such as SMEs, Green Products, and Green Packaging. This methodology aims to ensure that the findings are of higher quality, complete, and comprehensive.

Population and Sample

The term ‘population’ refers to a general study area consisting of objects or subjects with specific qualities and characteristics. The population for this research comprises SMEs in the tourism sector in East Java, which has the highest number of SMEs among Indonesian provinces. As of 2022, there were 9,782,262 active SMEs in East Java Timur **[66]**. However, this study focuses specifically on SMEs within the tourism sector. This sector encompasses

various types of businesses, including culinary services (such as food and beverages), tourist attractions, souvenir shops, handicrafts, and other related activities.

The study sample comprises 200 respondents, with 50 respondents from each of the following cities: Malang, Batu, Pamekasan, and Banyuwangi. Consumers and SMEs were analysed simultaneously using Structural Equation Modelling (SEM). This popular statistical analysis tool combines factor analysis with regression analysis to examine the relationships among variables within a model, including those between indicators and constructs, as well as among constructs. SEM allows researchers to address regression or dimensional research questions and facilitates the measurement of concepts [67].

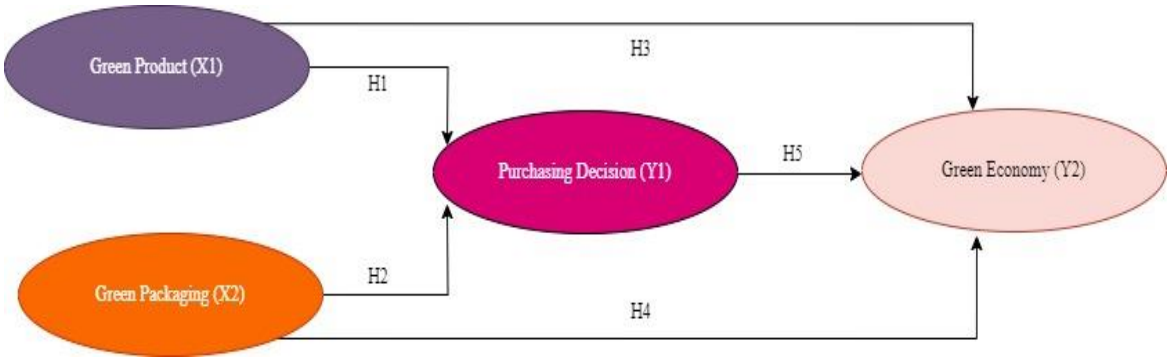

Figure 1. Relationships between research variables

Figure 1 illustrates the conceptual framework, i.e., the relationships among variables, tested in this study. The framework is grounded in sustainability and consumer behaviour theories, highlighting both direct and indirect relationships among constructs. Green Product (X1) and Green Packaging (X2) are proposed as exogenous variables that influence both the Purchase Decision (Y1) and the Green Economy (Y2). The Purchase Decision (Y1) serves as a mediating variable, transmitting the effect of green products and green packaging on the green economy.

The model specifies seven hypotheses (H1–H7):

H1. Green Products have a positive effect on Purchase Decisions.

H2. Green Packaging has a positive effect on Purchase Decisions.

H3. Green Products have a positive effect on the Green Economy.

H4. Green Packaging has a positive effect on the Green Economy.

H5. Purchase Decisions have a positive impact on the Green Economy.

H6. Green Products have an indirect effect on the Green Economy through Purchase Decisions.

H7. Green Packaging has an indirect effect on the Green Economy through Purchase Decisions.

Statistical Analysis

SmartPLS software is employed to analyse the conceptual framework in which Structural Equation Modelling (SEM) is used for multivariate data analysis and framework evaluation [68]. The analysis proceeds in two main stages.

(a) Measurement model assessment: The validity and reliability of the measurement model are evaluated. This stage includes assessing Convergent Validity, Discriminant Validity, and construct reliability using coefficients such as the standard regression coefficient β and p-values. The OUTER MODEL of Structural Equation Modelling (SEM) is examined through indicators reflecting Convergent Validity and Discriminant Validity, as well as reliability using Cronbach's Alpha and Composite Reliability. An assessment is considered valid if the external factor load is greater than 0.7. Furthermore, the value is considered reliable if the threshold value is 0.7.

(b) Structural Model Assessment: The structural model is evaluated to test the hypothesised relationships and the overall model fit.

RESULTS

This section presents the research results, which include reliability and validity assessments, reliability analysis, structural model (inner model), and model evaluation.

Reliability and Validity Assessment

Table 5. Construct validity measurement results

	Item	Factor Loading	Criterion	AVE	Criterion
X1 Green Product	GP1	0.803	Valid		
	GP2	0.732	Valid		
	GP3	0.763	Valid		
	GP4	0.761	Valid		
	GP5	0.757	Valid	0.595	Valid
	GP6	0.785	Valid		
	GP7	0.728	Valid		
	GP8	0.786	Valid		
	GP9	0.857	Valid		
	GP10	0.732	Valid		
X2 Green Packaging	PC1	0.759	Valid		
	PC2	0.788	Valid		
	PC3	0.787	Valid		
	PC4	0.739	Valid		
	PC5	0.743	Valid		
	PC6	0.743	Valid	0.612	Valid
	PC7	0.854	Valid		
	PC8	0.776	Valid		
	PC9	0.812	Valid		
	PC10	0.759	Valid		
	PC11	0.806	Valid		
	PC12	0.810	Valid		
Y1 Purchase Decisions	PD1	0.772	Valid		
	PD2	0.846	Valid		
	PD3	0.821	Valid		
	PD4	0.728	Valid		
	PD5	0.781	Valid	0.636	Valid
	PD6	0.831	Valid		
	PD7	0.785	Valid		
	PD8	0.786	Valid		
	PD9	0.825	Valid		
	PD10	0.794	Valid		
2 Green Econ	GE1	0.717	Valid		
	GE2	0.736	Valid		

Item	Factor Loading	Criterion	AVE	Criterion
GE3	0.792	Valid		
GE4	0.727	Valid		
GE5	0.775	Valid	0.574	Valid
GE6	0.813	Valid		
GE7	0.807	Valid		
GE8	0.767	Valid		
GE9	0.726	Valid		
GE10	0.709	Valid		

Convergent validity. Each item in the variables must exhibit convergent validity with an outer loading value greater than 0.7. For the Green Product variable X1, 10 items were valid with factor loadings ranging from 0.728 to 0.857, with the highest loading on item GP9 (“there are limited product choices available with green packaging”). For the Green Packaging variable X2, 12 items were valid with factor loadings ranging from 0.739 to 0.854, with the highest loading on item PC7 (“the design of green packaging tends to be less attractive”). The Purchase Decision variable Y1 includes 10 valid items with loadings between 0.728 and 0.846, with the highest loading on item PD2 (“products with green packaging tend to sell less”). The Green Economy variable Y2 has 10 valid items with loadings between 0.709 and 0.813, with the highest loading on item GE6 (“green packaging serves as attractive branding, making products easier to sell to domestic and foreign tourists”).

Table 5 displays the outer loading values for each indicator in the Green Product (X1), Green Packaging (X2), Purchase Decision (Y1), and Green Economy (Y2) constructs. All indicators have values above 0.7, indicating that convergent validity is met. For example, indicator GP9 (“there are limited product choices available with green packaging”) has the highest loading, 0.857, which means it strongly represents the Green Product construct. The AVE values are also above 0.5 (X1 = 0.595; X2 = 0.612; Y1 = 0.636; Y2 = 0.574), confirming that more than 50% of the indicator's variance is explained by the construct.

Discriminant validity. Cross-loading values indicate that all items have higher loadings on their respective constructs compared to other variables. Factor loadings for each item are greater on their designated variables. The cross-loading results are shown in **Table 5**. According to the Fornell-Larcker criterion, the square root of AVE for each construct is greater than its correlations with other variables, indicating good discriminant validity. The results are presented in **Table 6** and **Table 7**

Table 6 explains the Fornell-Larcker Test, which compares the square root of the AVE of each construct with the correlation between constructs. The diagonal value (square root of the AVE) is always higher than the correlation value between variables. For example, Purchase Decision, 0.798, is greater than its correlation with other variables. This ensures that each construct has sufficient conceptual uniqueness.

Table 7 presents the cross-loading values, which are the correlations between indicators and their respective constructs compared to other constructs. The results indicate that each indicator has the highest loading on its original construct, thus achieving discriminant validity. For example, indicator PC7 ("the design of green packaging tends to be less attractive ") has a loading of 0.854 on Green Packaging, higher than the loadings on other variables, making this indicator valid for representing the PC construct.

Table 6. Fornell-Larcker test results

	X1 Green Product	X2 Green Packaging	Y1 Purchase Decision	Y2 Green Economy
X1 Green Product	0.771			
X2 Green Packaging	0.259	0.782		
Y1 Purchase Decision	0.483	0.498	0.798	
Y2 Green Economy	0.46	0.468	0.577	0.758

Table 7. Cross-loading values

	X1 Green Product	X2 Green Packaging	Y1 Purchase Decision	Y2 Green Economy
GE1	0.336	0.305	0.26	0.717
GE10	0.306	0.243	0.387	0.709
GE2	0.273	0.293	0.325	0.736
GE3	0.387	0.329	0.503	0.792
GE4	0.319	0.285	0.392	0.727
GE5	0.334	0.403	0.644	0.77
GE6	0.397	0.405	0.518	0.813
GE7	0.382	0.469	0.467	0.807
GE8	0.343	0.344	0.291	0.767
GE9	0.384	0.395	0.427	0.726
GP1	0.803	0.241	0.318	0.36
GP10	0.732	0.125	0.396	0.317
GP2	0.732	0.261	0.269	0.393
GP3	0.763	0.092	0.3	0.332
GP4	0.761	0.222	0.43	0.42
GP5	0.757	0.076	0.22	0.233
GP6	0.785	0.208	0.236	0.296
GP7	0.728	0.15	0.307	0.222
GP8	0.786	0.295	0.573	0.422
GP9	0.857	0.229	0.456	0.422
PD 1	0.379	0.402	0.772	0.531
PD 10	0.428	0.457	0.794	0.389
PD 2	0.293	0.383	0.846	0.424
PD 3	0.272	0.387	0.821	0.366
PD 4	0.452	0.314	0.728	0.458
PD 5	0.437	0.3	0.781	0.458
PD 6	0.385	0.448	0.831	0.527
PD 7	0.469	0.33	0.785	0.472
PD 8	0.289	0.506	0.786	0.513
PD 9	0.421	0.416	0.825	0.422
PC1	0.293	0.759	0.345	0.294
PC10	0.229	0.759	0.357	0.431
PC11	0.143	0.806	0.272	0.385

	X1 Green Product	X2 Green Packaging	Y1 Purchase Decision	Y2 Green Economy
PC12	0.17	0.81	0.375	0.311
PC2	0.186	0.788	0.373	0.367
PC3	0.24	0.787	0.418	0.402
PC4	0.102	0.739	0.14	0.197
PC5	0.196	0.743	0.327	0.312
PC6	0.179	0.743	0.558	0.415
PC7	0.253	0.854	0.538	0.383
PC8	0.274	0.776	0.344	0.405
PC9	0.11	0.812	0.378	0.356

Reliability

Reliability refers to the extent to which measurement results are accurate. Using SmartPLS, there are two types of reliability: item reliability and construct reliability. Item reliability measures how accurately and reliably each item of a construct performs. The metric used for item reliability is outer loading. The threshold value for item reliability is 0.7. **Table 8** shows the item reliability, indicating that all items have outer loading values greater than the threshold. This result demonstrates that all model items are reliable. Construct reliability assesses the overall reliability of the construct for further study. The metrics used for construct reliability are Composite Reliability and Cronbach's Alpha. The threshold value for both metrics is 0.7 or above. **Table 8** also indicates that all constructs have Cronbach's Alpha and Composite Reliability values exceeding the threshold, confirming that all constructs are reliable.

Table 8. Results of reliability testing

Variable	Cronbach's Alpha	Composite Reliability	Criterion
X1 Green Product	0.925	0.936	Reliable
X2 Green Packaging	0.943	0.950	Reliable
Y1 Purchase Decision	0.936	0.946	Reliable
Y2 Green Economy	0.918	0.931	Reliable

Cronbach's Alpha values for each variable exceed 0.7, indicating that the variables used – X1 (Green Product), X2 (Green Packaging), Y1 (Purchase Decision), and Y2 (Green Economy) – are reliable. Additionally, the Composite Reliability values for each variable are also greater than 0.7, confirming that these variables are categorised as having high reliability.

Structural Model (Inner Model)

In this study, the structural model was analysed using Smart PLS software. The resulting structural diagrams are presented in **Figure 2** and **Figure 3**.

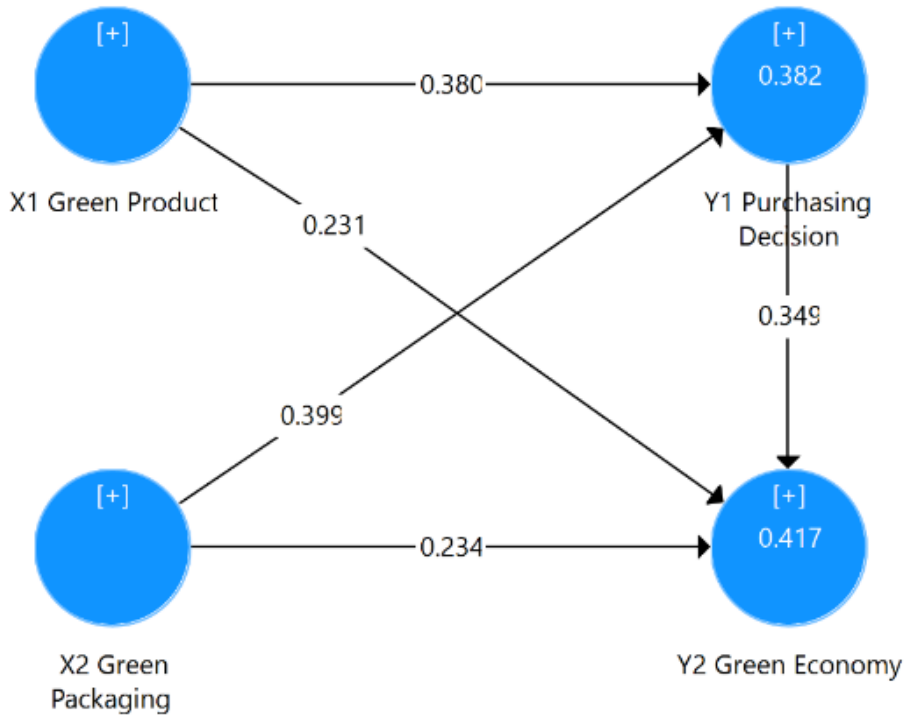

Figure 2. Structural model

Based on the diagram of **Figure 2**, the structural model equations are as follows:

$$Y1 = 0.380\ X1 + 0.399\ X2 + ei1;\ R^2 = 0.382 \quad (1)$$

$$Y2 = 0.231\ X1 + 0.234\ X2 + 0.349\ Y1 + ei2;\ R^2 = 0.417 \quad (2)$$

Where: X1 denotes Green Product, X2 – Green Packaging, Y1 – Purchase Decision, Y2 – Green Economy, ei1 and ei2 – Residuals.

Figure 2 presents the structural model focusing on the direct effects of Green Product (X1) and Green Packaging (X2) on Purchase Decision (Y1). The results indicate that both predictors have a significant and positive impact on purchase decisions. Specifically, regarding the direct effect of X1 on Y1 (Green Product → Purchase Decision): $\beta = 0.380$, $t = 4.735$, $p < 0.001$, $f^2 = 0.145$, 95% CI [0.218, 0.532]. This result indicates that environmentally friendly product attributes strongly enhance consumers' likelihood of making eco-conscious purchase decisions. Regarding the effect of X2 on Y1 (Green Packaging → Purchase Decision): $\beta = 0.399$, $t = 5.581$, $p < 0.001$, $f^2 = 0.167$, 95% CI [0.248, 0.544]. In plain language, packaging innovations serve as a critical determinant of consumer choices, underscoring the strategic role of sustainable packaging in influencing market behaviour.

The explanatory power of the model is reflected in $R^2 = 0.382$, indicating that the joint influence of green product and green packaging accounts for 38.2% of the variance in purchase decisions. This result confirms the theoretical prediction that consumer purchase behaviour is shaped by product- and packaging-level sustainability attributes, consistent with the Theory of Planned Behaviour.

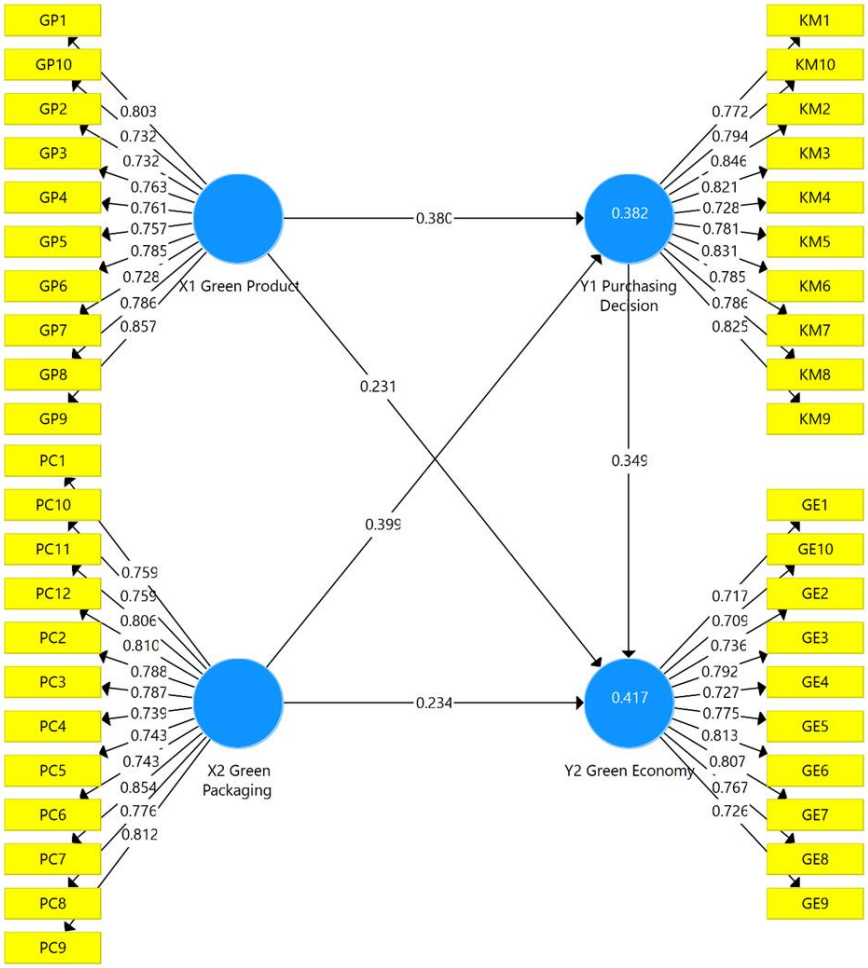

Figure 3. Detailed structural model

Figure 3 extends the analysis by incorporating Green Economy (Y2) as an outcome variable, with Purchase Decision (Y1) acting as a mediator. The findings demonstrate significant direct and indirect relationships.

Regarding the direct effects:

- X1 on Y2 (Green Product → Green Economy): β = 0.231, t-statistic = 2.257, p = 0.024, f^2 = 0.062, 95% CI [0.042, 0.389]
- X2 on Y2 (Green Packaging → Green Economy): β = 0.234, t-statistic = 2.249, p = 0.025, f^2 = 0.059, 95% CI [0.035, 0.390]
- Y1 on Y2 (Purchase Decision → Green Economy): β = 0.349, t-statistic = 2.467, p = 0.014, f^2 = 0.124, 95% CI [0.071, 0.514]

These results indicate that both product and packaging attributes directly contribute to economic sustainability, while consumer purchase behaviour further amplifies this contribution.

Regarding the indirect effects (mediation):

- X1 on Y1 on Y2 (Green Product → Purchase Decision → Green Economy): β = 0.133, t-statistic = 2.226, p = 0.026, f^2 = 0.051, 95% CI [0.021, 0.261]
- X2 on Y1 on Y2 (Green Packaging → Purchase Decision → Green Economy): β = 0.139, t-statistic = 2.354, p = 0.019, f^2 = 0.057, 95% CI [0.029, 0.274].

These findings confirm the mediating role of consumer purchase decisions, demonstrating that environmentally friendly practices have their greatest influence on the green economy when translated into actual consumer behaviour. The explanatory power of the extended model is reflected in R^2 = 0.417, indicating that 41.7% of the variance in green economy outcomes is

jointly explained by green product, green packaging, and purchase decisions. The Goodness of Fit (GoF) index of 0.492 suggests a large effect size, demonstrating that the model is both theoretically robust and empirically well-fitted.

However, the strength of the direct paths from green product → green economy and green packaging → green economy was relatively weak (β around 0.23), with marginal t-statistics just above 2.0. Additionally, several measurement items, such as GP7 (reasonably priced for consumers) and GE10 (export potential limited by production scale), showed lower loadings compared to other items, indicating that not all dimensions were equally valued by consumers. These findings highlight the presence of unexpected or weaker-than-anticipated effects that warrant closer interpretation.

Model Evaluation

The evaluation of the inner model includes the following tests: (1) Coefficient of Determination (R^2) to measure the proportion of variance in the dependent variables explained by the independent variables; (2) Predictive Relevance (Q^2) to assess the model's predictive capability; and (3) Goodness of Fit Index (GoF) to evaluate the overall fit of the model.

Coefficient of determination. This coefficient (R^2) for the models is as follows:

- For Model 1, which assesses the impact of variables X1 (Green Product) and X2 (Green Packaging) on Y1 (Purchase Decision), the R^2 value is 0.382 or 38.2%.
- For Model 2, which assesses the impact of variables X1 (Green Product), X2 (Green Packaging), and Y1 (Purchase Decision) on Y2 (Green Economy), the R^2 value is 0.417 or 41.7%.

The results of the coefficient of determination are summarised in **Table 9**.

Table 9. Coefficient of determination results

Effect	R^2
X1, X2 → Y1	0.382
X1, X2, Y1 → Y2	0.417

Goodness of fit index. The Goodness of Fit (GoF) test is conducted to assess the overall fit of the model by multiplying the average values of the coefficient of determination (R^2) and the average variance extracted (AVE). The formula is:

$$\text{GoF} = \sum \sqrt{\overline{\text{AVE}} \times \overline{\text{R}^2}} \tag{3}$$

In the case under study:

$$\text{GoF} = \sqrt{0.605 \times 0.400} = 0.492 \tag{4}$$

A GoF value of 0.492 indicates that the model's fit is considered large (> 0.36).

Hypothesis testing. This section evaluates the coefficients or parameters indicating the influence of one latent variable on another. An effect is considered significant if the p-value is less than 0.05 and not significant if the p-value is greater than 0.05. The results from the SmartPLS software are as follows:

a) Direct effect hypotheses

Variable X1 (Green Product) has a positive and significant effect on variable Y1 (Purchase Decision). The t-statistic value is greater than the critical value (4.735 > 1.96), and the p-value is smaller than the significance level α (0.000 < 0.050). The positive coefficient indicates that an increase in variable X1 (Green Product) can significantly enhance variable Y1 (Purchase Decision).

Variable X2 (Green Packaging) also has a positive and significant effect on variable Y1 (Purchase Decision). The t-statistic value exceeds the critical value (5.581 > 1.96), and the p-value is smaller than α (0.000 < 0.050). The positive coefficient suggests that an increase in variable X2 (Green Packaging) can significantly improve variable Y1 (Purchase Decision).

Variable X1 (Green Product) has a positive and significant effect on variable Y2 (Green Economy). The t-statistic value is greater than the critical value (2.257 > 1.96), and the p-value is smaller than α (0.024 < 0.050). The positive coefficient indicates that an increase in variable X1 (Green Product) can significantly enhance variable Y2 (Green Economy).

Variable X2 (Green Packaging) has a positive and significant effect on variable Y2 (Green Economy). The t-statistic value is greater than the critical value (2.249 > 1.96), and the p-value is smaller than α (0.025 < 0.050). The positive coefficient suggests that an increase in variable X2 (Green Packaging) can significantly improve variable Y2 (Green Economy).

Variable Y1 (Purchase Decision) has a positive and significant effect on variable Y2 (Green Economy). The t-statistic value is greater than the critical value (2.467 > 1.96), and the p-value is smaller than α (0.014 < 0.050). The positive coefficient indicates that an increase in variable Y1 (Purchase Decision) can significantly enhance variable Y2 (Green Economy).

The results are presented in **Table 10**.

Table 10. Results of direct effect analysis with t-statistic

Effect	Standard regression coefficient	t-statistic	p	Criterion
X1 → Y1	0.380	4.735	0.000	Significant
X2 → Y1	0.399	5.581	0.000	Significant
X1 → Y2	0.231	2.257	0.024	Significant
X2 → Y2	0.234	2.249	0.025	Significant
Y1 → Y2	0.349	2.467	0.014	Significant

b) Indirect effect hypotheses

The indirect effect of variable X1 (Green Product) on variable Y2 (Green Economy) through variable Y1 (Purchase Decision) is significant. The t-statistic value is greater than the critical value (2.226 > 1.96), and the p-value is smaller than α (0.026 < 0.050). The variable Y1 (Purchase Decision) mediates the effect of the variable X1 (Green Product) on Y2 (Green Economy); it is a partial mediation, as the direct effect of X1 on Y2 is also significant.

The indirect effect of variable X2 (Green Packaging) on variable Y2 (Green Economy) through variable Y1 (Purchase Decision) is significant. The t-statistic value is greater than the critical value (2.354 > 1.96), and the p-value is smaller than α (0.019 < 0.050). The variable Y1 (Purchase Decision) mediates the effect of X2 (Green Packaging) on Y2 (Green Economy); it is a partial mediation, as the direct effect of X2 on Y2 is also significant.

The results can be seen in **Table 11**.

Table 11. Results of indirect effect hypothesis testing

Effect	Standard regression coefficient	t-statistic	p	Criterion
X1 → Y1 → Y2	0.133	2.226	0.026	Significant
X2 → Y1 → Y2	0.139	2.354	0.019	Significant

DISCUSSION

The goal of this study was to investigate the influence of green products and green packaging on consumer decisions and the development of the green economy. Previous research has explored consumer perceptions of environmentally friendly and sustainable packaging [69] and the impact of communication on consumers' purchasing intentions [70]. Most research has focused on how environmental issues affect the intention to buy eco-friendly alternatives [71], [72]. However, few studies have investigated the influence of green products and green packaging on decisions related to the green economy. The increasing environmental awareness among consumers, particularly among Generation Z, presents an opportunity for marketers to enhance their understanding of product choices [69].

The findings from this study show that all direct effect hypotheses are significantly positive. This result aligns with previous research, which confirms that most consumers are willing to pay more for environmentally friendly packaging [33]. Given the current value consumers place on environmental benefits, pricing is no longer a barrier [73]. Additionally, consumer shopping habits and their environmental concern reflect their eco-friendly lifestyle, consistent with previous studies [74].

The study also found that all indirect effects hypotheses are positively significant. This result is attributed to consumers' purchase intentions being driven by self-awareness [75]. Increased awareness of environmental protection causes consumers to be more selective when choosing packaging products, expecting them to be environmentally friendly, properly labelled, and informative. This finding supports existing literature on the relationship between packaging and purchase intention [76]. The study highlights five supporting factors: (a) better product quality, (b) following market trends, (c) market share, (d) community empowerment, and (e) government support.

While these findings offer optimistic evidence about the potential of green products and packaging to accelerate the green economy, it is essential to consider the realities and risks associated with greenwashing. Greenwashing occurs when consumers or producers mislead themselves or others into believing they are more responsible and sustainable than they actually are by engaging in or promoting "green purchases." Previous research suggests that greenwashing can create false perceptions of environmental progress, mislead stakeholders, and ultimately undermine trust in sustainability claims. For consumers, the risk lies in believing that purchasing a single green product will exempt them from broader behavioural changes. For producers, particularly SMEs, there is a temptation to adopt superficial strategies such as eco-coloured packaging or vague sustainability claims without implementing substantive improvements in sourcing, production, or waste reduction.

Better Product Quality

Green packaging is produced to high standards, particularly in terms of safety, durability, and environmental impact. This statement aligns with findings from previous studies, which demonstrate that green products adhere to high-quality production standards and utilise healthier materials [77]. Furthermore, prior research has found that consumers are willing to pay more when they perceive environmentally friendly products as offering tangible benefits, such as increased safety and durability [78]. It aligns with the willingness-to-pay pattern observed in this study among environmentally conscious consumers in East Java [33].

Consumers evaluate environmentally friendly products not only based on price but also on perceived added value in terms of quality and sustainability. The positive relationship found here between environmentally friendly product adoption and purchasing decisions highlights that SMEs producing higher quality environmentally friendly goods are more successful in attracting environmentally conscious consumers. Furthermore, the use of environmentally friendly packaging is beneficial in significantly reducing plastic waste and can enhance the industry's branding and reputation. New entrants innovating in creating products with green packaging further support the continuation of the green packaging movement **[79]**.

Figure 4. Green packaging for Telemung Coffee in Banyuwangi

Figure 4 shows the green packaging used by Telemung Coffee SME in Banyuwangi. The coffee packaging uses biodegradable materials as a branding strategy for the coffee product **[80]**. Green packaging helps naturally maintain the quality and aroma of the coffee **[81]**, as confirmed by previous research findings that coffee aroma lasts longer when packaged in green packaging **[82]**. Furthermore, the use of green packaging not only attracts environmentally conscious consumers but also strengthens the product's appeal to local tourism **[83]**. The study's findings clearly demonstrate that green packaging has a significant impact on purchasing decisions, with a significance value of $\beta = 0.399$ and $p < 0.001$.

Figure 5 illustrates the use of green packaging for apple pies in Batu City, which utilises environmentally friendly materials, specifically cardboard. The material adapted for apple pie packaging is designed to be biodegradable. Furthermore, a simple yet attractive design is applied as a local identity and sustainability values. Environmentally friendly practices, such as the implementation of green packaging, reflect that SMEs are not only adapting to consumer preferences for environmentally friendly products but also aligning their marketing strategies with current sustainability trends **[33]**. It aligns with findings from previous research that sustainability-oriented packaging, such as green packaging, is not only a global trend but also relevant for local products **[58]**.

Figure 5. Apple pies from Batu City

Following Current Market Trends

The results of this study indicate that consumers' alignment with current market trends in sustainability significantly influences their purchasing decisions for green products and packaging. This finding aligns with previous research, which shows that increasing environmental awareness and the popularity of sustainability movements create social pressure that shapes consumer preferences [84]. Furthermore, previous findings suggest that consumers are increasingly considering green products and packaging as part of their broader lifestyle choices, even when these products are priced higher than conventional alternatives [85].

Additionally, the influence of branding on social media, where awareness of green products and green packaging is increasingly prevalent, has been shown to enhance consumer awareness positively [86]. The popularity of green packaging presents a significant opportunity for sustainability [87]. There's evidence that Gen Z, who are active on social media, are motivated to choose green packaging [88]. Green packaging serves as an attractive branding tool, making products easier to sell to both domestic and international tourists. As illustrated in Figure 6, the online store of Omah Kopi Telemung in Banyuwangi exemplifies the role of e-commerce in promoting green products.

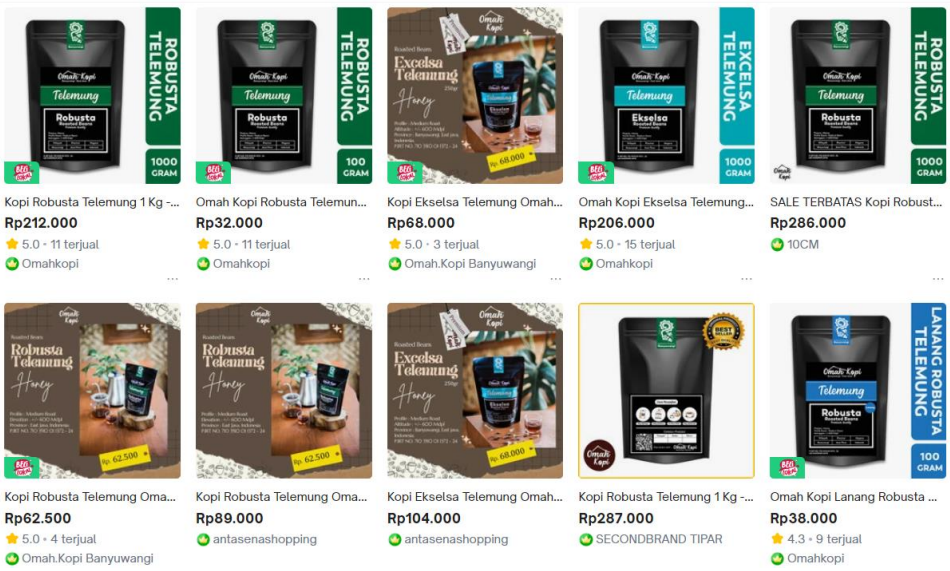

Figure 6. Online showcase of green products at Omah Kopi Telemung, Banyuwangi

Figure 6 shows the Omah Kopi Telemung online store in Banyuwangi, which serves as a strategy to support environmentally friendly products. The online store, by implementing e-commerce as its platform, can provide wider market access for coffee products [89]. The main focus of marketing is emphasising sustainability and adopting green packaging, as well as marketing using e-commerce, which is a good strategy. It aligns with previous findings that collaboration between e-commerce and sustainability values in green packaging can subconsciously increase consumers' awareness of the importance of protecting the environment through the use of green packaging [90]. Omah Kopi Telemung exemplifies how e-commerce contributes to the green economy by reducing marketing barriers, expanding consumer reach, and supporting small-scale producers who are committed to environmentally friendly practices.

Recognising the Niche Market for Green Products

Green products with green packaging are known to have a distinct appeal in attracting consumers [91]. This correlates with a shift in preference from conventional products to more sustainable ones, facilitated by the increased accessibility of information [92]. Prospective consumers are increasingly seeking detailed information about the origins of products, the

materials used, and the environmental impact of their production, making green products and green packaging more prominent [92]. Moreover, e-commerce plays a significant role in branding [93], enabling local industries to distribute their green products online effectively.

For example, eco-print products are produced in Pamakesan, Madura Island. Eco-printing is considered more economical due to its simple process and use of natural dyes derived from local plants, such as leaves, flowers, and twigs, which helps reduce production costs. These natural materials replace synthetic dyes that can harm the environment. By reducing the use of hazardous chemicals, eco-printed fabrics help maintain water quality and decrease environmental pollution. Eco-print products include batik fabrics, tote bags, hats, wallets, and sandals. The packaging for these eco-print products utilises paper made from wood pulp, making both the products and their packaging environmentally friendly due to the absence of synthetic dyes. These products can be seen in **Figure 7**.

Figure 7. Eco-print products in Pamekasan, Madura

Additionally, Pamekasan is also known for its fisheries. Fish catches are sold in containers made from bamboo, locally known as “rantang”. Bamboo weaving as packaging is cost-effective and customisable, providing a sturdy and durable packaging solution. Bamboo containers are used not only for fish but also for shrimp paste. Most fish and shrimp paste vendors in Madura already use “rantang”. However, some small- and medium-sized enterprises (SMEs) still use plastic packaging due to its availability, practicality, and lower production costs compared to green packaging. It aligns with previous research, which shows that plastic packaging is easier to produce [94]. Furthermore, the production costs of green packaging do not differ significantly from those of non-environmentally friendly packaging [95].

The Role of Government in Community Empowerment

The development and innovation of green products can be sustainable if they both provide and receive benefits for/from local communities. For example, “UD Widya Handicraft” in Rogojampi District, Banyuwangi, produces a variety of bamboo crafts sourced from local bamboo farms. Besides purchasing raw materials from local communities, the handicraft managers also provide training to residents to ensure the sustainability of their operations [96]. Sustainable environmental training has been proven to increase local bamboo craft production [97]. The products from Widya Handicraft (see **Figure 8**) are widely exported to Japan and Spain.

Figure 8. Products of Widya Handicraft in Banyuwangi

Policy and Support From Local and Central Governments

Support from local governments in implementing eco-friendly programs is effective in reducing the use of single-use products or packaging [98]. Banyuwangi has "Green Banyuwangi", a program that includes a policy banning SMEs from using plastic packaging. This regulation has been gradually implemented, as evidenced by the shift towards non-single-use packaging among some SMEs. Interviews with vendors using green packaging revealed that the cost of this packaging is not significantly different from that of plastic packaging [53]. Educating other SMEs about green packaging is crucial to reducing plastic waste.

Synthetic plastic products have caused significant environmental changes [99], which can sometimes result in environmental disasters, including damage to soil fertility, water pollution, and local climate change [100]. As plastic damages the ecosystem, consumers must adopt sustainable consumption practices that do not harm the environment. One way to support sustainable consumption is by switching to environmentally friendly products and packaging. Green products have been shown to reduce harmful environmental effects, decrease toxic substances, address health issues, improve recycling, and enhance environmental friendliness [33].

However, beyond encouraging substitution from conventional to green products, it is equally important for policy frameworks to acknowledge the virtue of abstaining from the decision to purchase potentially unnecessary products at all. From a sustainability standpoint, abstaining represents a greener choice, as it eliminates the environmental costs of production, distribution, and disposal, regardless of whether the product is eco-labelled or not. Incorporating this perspective, governments could design campaigns that not only promote eco-friendly consumption but also encourage sufficiency-oriented lifestyles, such as buying less, prioritising essential goods, and extending product lifespans.

LIMITATIONS AND SUGGESTIONS

This research contributes theoretically by extending consumer behaviour research by integrating purchasing decisions into a broader green economy framework. Furthermore, it demonstrates that sustainable consumption practices influence economic transformation and provides strategic insights for SMEs, emphasising that environmentally friendly business practices enhance consumer trust and brand value, also serving as strategic levers for reducing plastic waste and accelerating the transition to a green economy.

Despite these contributions, the study has several limitations. First, it focuses on SMEs in the tourism sector of East Java. This limitation in the research location could be addressed in

future research by expanding the research location and adding new variables to provide novelty. Furthermore, this study focuses on local consumers, while the influence of global markets and digital platforms remains underexplored. Future studies should investigate how international consumer demand, e-commerce platforms, and social media engagement influence the adoption of environmentally friendly products and packaging.

CONCLUSIONS

This study provides empirical evidence on the role of green products and green packaging in influencing consumer purchase decisions and their subsequent impact on the green economy. The structural equation modelling (SEM) results confirm that green products significantly influence purchase decisions, explaining 38.2% of their variance ($R^2 = 0.382$). Furthermore, both green products and green packaging directly enhance the green economy, while purchase decisions serve as a critical determinant, increasing the model's explanatory power for the green economy to 41.7% ($R^2 = 0.417$). Mediation analysis further shows that purchase decisions partially mediate the relationship between green products and green packaging with the green economy, highlighting their central role in translating sustainable practices into economic outcomes.

The implementation of Green Products, Green Packaging, and Green Economy will be sustainable if SMEs in East Java can (1) follow current market trends, (2) recognize that products have a specific market niche, (3) empower the community, and (4) ensure the successful and sustainable implementation of Green Economy policies with support from local and central governments. Practically, this research provides actionable insights for SMEs to reduce plastic waste, enhance eco-branding, and improve competitiveness. At the same time, policymakers should design incentives and regulatory frameworks to accelerate the transition toward a green economy.

Nevertheless, the study is limited by its focus on SMEs in East Java's tourism sector and the use of cross-sectional data. Future research should expand the scope across regions and industries, employ longitudinal designs to capture dynamic consumer behaviour, and integrate behavioural or experimental data to validate self-reported measures. Moreover, investigating the role of renewable energy adoption, digital platforms, and social media in shaping green consumerism would enrich the understanding of sustainable business practices in emerging economies.

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NOMENCLATURE

Symbols

ei	residual
f^2	Cohen's f-squared
p	p-value
R^2	coefficient of determination
X1	Green Product
X2	Green Packaging
Y1	Purchase Decision
Y2	Green Economy

Greek letters

α	significance level
β	standard regression coefficient

Abbreviations

AVE	Average Variance Extracted
CI	Confidence Interval
GE	Green Economy
GoF	Goodness of Fit Index
GP	Green Product
PC	Green Packaging
PD	Purchase Decision
SEM	Structural Equation Modelling
SMEs	Small and Medium Enterprises

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