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Exploring the Consumer Preference for Sustainable Packaging in Metro Manila: Investigating the Influence of Environmental Values, Product Quality, and Price Sensitivity

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ABSTRACT

Purpose: This study aims to investigate consumer preferences for sustainable packaging in Metro Manila, focusing on the influence of environmental values, perceived product quality, and price sensitivity.

Methodology: A logistic regression model was employed to analyze the relationship between these variables and consumer willingness to pay a premium for sustainable packaging. Data will be collected through surveys administered to a sample of consumers in Metro Manila.

Findings: Environmental values, perceived product quality, and price sensitivity significantly shape consumer preferences for sustainable packaging in Metro Manila. Consumers with strong environmental beliefs, those who perceive sustainable packaging as higher quality, and those less concerned about price are more likely to select sustainable options.

Unique Contribution to Theory, Policy, and Practice: Consumers value both the functional and emotional aspects of products, as suggested by the Hedonic Pricing Model. In the context of sustainable packaging, consumers are willing to pay more for environmentally friendly and socially responsible options. To effectively promote sustainable packaging, businesses should prioritize high-quality, innovative solutions that align with consumer values and are affordable.

Keywords: *Consumer Preference, Environmental Values, Product Quality, Price Sensitivity, Plastic Pollution, Sustainable Packaging*

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1.0 INTRODUCTION

The Philippines is a major contributor to global plastic pollution, with an estimated 2.7 to 5.5 million metric tons of plastic waste generated annually, a significant portion of which leaks into the environment (Schachter & Karasik, 2022). The use of single-use plastics, particularly sachets, has worsened the problem, with Metro Manila experiencing a surge in waste generation due to packaging. The country's solid waste management is further complicated by the scarcity of new landfill sites and the use of open and controlled dumps, which pose environmental and public health risks (Castillo & Otoma, 2013). The high level of plastic contamination in local marine ecosystems, particularly in coastal areas, underscores the severity of the issue (Paler et al., 2019). To address these challenges, the Philippines has implemented the Ecological Solid Waste Management Act.

According to Kawecka (2016), sustainable packaging is designed to minimize its negative impact on the environment while meeting the needs of product protection and consumer preference. This is in line with the global concepts of sustainable development and circular economy, as highlighted by Kozik (2020). The use of renewable and recycled materials, as well as the reduction of packaging weight, are key strategies in achieving sustainable packaging. It emphasizes the importance of compliance with environmental legislation and the use of life cycle assessment in packaging design. Ibrahim et al. (2022) further underscores the need for sustainable packaging to meet present needs without compromising the ability of future generations to meet their own.

While many studies have explored the Filipino market's attitudes towards sustainable and eco-friendly products, there is a significant gap in understanding consumer preference in the context of sustainable packaging in Metro Manila. Dena et al. (2023) found that younger consumers are more receptive to these products, influenced by social factors such as family, friends, and social media. Tanpoco et al. (2023) highlighted the positive attitudes of Filipino consumers towards sustainable practices, with a particular affinity for businesses that champion environmental values. It also emphasized the growing importance of eco-friendly products and the need to study consumer preference in this area. Furthermore, research on consumer preference for sustainable products has identified various factors influencing consumer prerefence, including packaging design (Barnuevo & Roma, 2023), income level and product price, and environmental concerns and attitudes (Hyder & Amir, 2023).

This research aims to first explore the role environmental values play in influencing these preferences. Next, the researchers will assess how perceived product quality interacts with consumer preference, examining if sustainable packaging can maintain high-quality standards in the eyes of consumers. Lastly, the study will determine the impact of price sensitivity on the decision to choose sustainable packaging.

2.0 LITERATURE

2.1 The Relationship between Consumer Preference and Environmental Values

Consumers are becoming increasingly environmentally conscious, influencing their product choices, particularly packaging. Law et al. (2017), de Leaniz et al. (2018), and Bósquez et al. (2024) all point to a connection between environmental awareness and a preference for eco-friendly products. Eco-labels (de Leaniz et al., 2018) and green marketing (Bósquez et al., 2024) further reinforce these positive environmental attitudes.

However, consumer preference of "sustainable" can vary. While Yokokawa et al. (2021) found a general preference for clear environmental information and labels, individual decision-making styles come into play. Piracci et al. (2023) highlight how some prioritize minimal packaging, while others might accept plastic packaging if eco-friendly alternatives are unavailable. Biodegradability is another factor influencing perception, with consumers sometimes prioritizing it over recyclability made from renewable resources (Herbes et al., 2018).

Environmental concern also plays a role. Magnier & Schoormans (2015) observed that consumers with high environmental concerns (HEC) are more likely to favor products with sustainability claims. Conversely, those with lower concerns (LEC) are less swayed by such claims. Social identity also influences choices; Zinoubi (2020) suggests consumers are more likely to buy eco-friendly products if they believe it aligns with their social circles' approval. Effective communication on packaging regarding environmental responsibility can address these concerns and encourage positive responses (Shimul & Cheah, 2023).

A disconnect exists between consumer preference and scientific assessment of sustainable packaging. Consumers often focus on recyclability, reusability, biodegradability, and visual design, neglecting factors like transportation and food waste (Otto et al., 2021). This highlights the need for educational initiatives. Well-educated employed consumers and students tend to be more receptive to environmental efforts but may lack awareness of proper plastic disposal and recycling practices (Norton et al., 2022).

While plastic is often perceived as the least eco-friendly option, consumers acknowledge its benefits and recognize manufacturers' role in providing sustainable options (Nguyen et al., 2020). Similarly, Hao et al. (2019) found that Chinese consumers are willing to pay more for green products but lack specific knowledge about green packaging. Clear labeling can bridge this knowledge gap.

A "value-action gap" exists between consumers' stated preferences and their actual behavior. Misleading information, lack of knowledge, and prioritizing affordability over environmental benefits all contribute to this gap (Boz et al., 2020). Despite these challenges, a trend towards responsible consumption is evident. Consumers increasingly seek packaging that minimizes waste, utilizes recycled materials, and is itself recyclable (Orzan et al., 2018). Their purchasing decisions

reflect a dual motivation: minimizing environmental impact and personal savings through recycling.

2.2. The Relationship between Consumer Preference and Product Quality

Consumers associate attractive and safe packaging with higher quality. However, visual appeal alone might not influence brand preference or repurchase intention (Chaudhary, 2014; Chitturi et al., 2022; Setiowait & Liem, 2018). Sustainable packaging can also be perceived as high quality. This perception is linked to the idea of natural and healthy ingredients (Ecevit, 2023; Magnier et al., 2016). Additionally, Nascimento et al. (2022) and Soegoto (2018) shows that when both eco-friendly features and product quality are high, customer satisfaction is even stronger. This suggests a potential for manufacturers to win over customers by focusing on both sustainability and quality.

Packaging significantly impacts perceived quality and plays a role in building strong brand-consumer relationships. It goes beyond functionality and encompasses emotional aspects as consumers prioritize brands with positive emotional connections even if functionally similar options exist. Building trust and loyalty through consistent quality allows companies to benefit from repeat purchases and positive recommendations (Evgeniya et al., 2021). The quality, design, and usability of packaging can significantly impact how consumers perceive the brand and their post-consumption experience. High-quality packaging can contribute to brand profitability by fostering positive brand associations (Danes et al., 2014). Consistent quality is crucial for customer satisfaction and loyalty. Satisfied customers who receive value from their purchases are more likely to become repeat customers and loyal brand advocates. Delivering consistent quality is a strategic investment that fosters customer loyalty and drives business success (Bhat & Lone, 2023; Sitanggang et al., 2019; Yuen & Chan, 2010).

Wang (2020) investigates the manufacturer price-cost ratio as a key factor in quality improvement strategies for dual-channel supply chains. Centralized decision-making leads to a consistent improvement level regardless of channel preference, while decentralized structures see higher improvement for the more preferred channel.

Understanding consumer preferences is crucial for retailers. Retailers can tailor their strategies based on customer segments. For quality-conscious consumers, prioritizing high-quality products is essential. For those focused on aesthetics, packaging investment is important. Finally, a low-cost, high-quality strategy can attract price and quality-sensitive consumers (Fu et al., 2021). While increased quality makes consumers choosier, it can also make them find suitable options faster. It also identifies factors influencing quality investment by firms, highlighting potential inefficiencies in the market. This suggests that features valued by average consumers (e.g., reliability in cars) might be over-invested in compared to features appealing to a niche group (e.g., powerful sound systems for car enthusiasts) (Moraga-González et al., 2023).

Consumers in Metro Manila prioritize sustainable packaging, but only if it doesn't compromise perceived quality. Sustainable packaging that reinforces ideas of health and natural ingredients can be particularly appealing (Ecevit, 2023; Magnier et al., 2016).

2.3. The Relationship between Consumer Preference and Price Sensitivity

Consumers are willing to compromise on some aspects of sustainability, like slightly worse food preservation, if other factors like price and quality are favorable (Granato et al., 2022; Mahajan et al., 2023). Overall, price, quality, and brand remain the top priorities (Oloyede & Lignou, 2021). However, their willingness to pay a premium for sustainability varies.

According to Popovic et al. (2020) and Slaba (2020) consumers with higher eco-literacy, income, and education are more likely to pay more for sustainable packaging. However, price sensitivity is also a factor, with older consumers, females, and those with larger families being more price-conscious (Slaba, 2020).

Interestingly, knowledge about sustainability plays a role. Consumers in India were unwilling to pay more for sustainable packaging due to a lack of understanding of its benefits (Mahajan et al., 2023). Similarly, Brazilian consumers, while interested in biodegradable packaging, made purchase decisions based on knowledge, motivation, and information access (Carvalho et al., 2022).

There's also a tension between a premium price for sustainable options and brand loyalty (Anselmsson, 2014). Higher product quality leads to increased customer satisfaction, which in turn fosters loyalty. It highlights the role of price as a factor influencing customer perception. When customers feel the price is reasonable relative to the quality and service they receive, it contributes to greater satisfaction and loyalty (Albari, 2020). Food brands may prioritize repeat purchases over high margins, while other brands might focus on a premium image to justify higher prices. Anselmsson (2014) suggests that brands need to focus on other aspects of brand image to justify such pricing.

Consumers are also wary of "greenwashing" and unclear sustainability claims. Hermann et al. (2022) found that consumers were unsure about the true sustainability of bioplastics, questioning their use as an alternative to conventional plastic.

Effective pricing considers various factors beyond just sustainability. Al-Mamun (2014) highlights that both consumers and businesses need to consider product quality, market competition, and product type when evaluating price. Understanding these factors and consumer price sensitivity is crucial for businesses to develop effective pricing strategies (Al-Mamun, 2014).

Incorporating 'relative thinking' further clarifies consumer preference regarding price and sustainability. Similar to how consumers compare product qualities (Inderst & Obradovits, 2020), they might be willing to pay a slight premium for sustainable packaging if the overall price remains

competitive compared to conventional options. Sustainability can even act as a complement to price. When a product offers both a reasonable price and sustainable packaging, it can be more attractive to eco-conscious consumers who are willing to spend a bit more for environmental benefits. Conversely, a high price tag for sustainable packaging might outweigh the environmental benefits for some consumers, leading them to choose a less expensive, conventional option (substitutes).

3.0 Method

3.1 Research Design and Subjects

Descriptive statistics were employed, utilizing a survey method to explore consumer preferences for sustainable packaging in Metro Manila. This approach was ideal as it allowed for the collection of quantitative data to describe consumer characteristics and preferences. The survey targeted a sample population within Metro Manila and assessed factors influencing sustainable packaging preference, including environmental values, product quality perception, and price sensitivity. This data was statistically analyzed to identify trends and potential relationships between these variables and consumer preferences.

A stratified sampling technique was also used to gather data from a representative Metro Manila consumer population sample. This approach ensured that the collected data reflected the demographic diversity of the target population and allowed for more generalizable conclusions. Stratified random sampling involves dividing the population into subgroups (strata) based on relevant demographic characteristics that might influence preferences for sustainable packaging. This study considered two key strata: age and geographic location. The age should be 18 years old and above and the geographic location should cater to representatives from each city in Metro Manila.

The sample size was calculated using the Raosoft online sample size calculator. A 5 percent margin of error, a 50 percent answer distribution, and a confidence level of 95 equated to a total of 385 sample size (n). However, this was only the minimum size since the researchers targeted to have at least 1,200 respondents. According to Philippine Institute for Development Studies (2021), statistical theory; the estimate from a sample of a population's voting percentage has a measure of precision called the "standard error," which depends on the sample size and the proportion's actual value. Specifically, the square root of the sample size has an inverse relationship with the standard error. In other words, we would have needed to raise the sample size by four in order to double the precision. We would have required a sample size n of around 1,111, which, rounded to the closest hundred, is 1,200.

Locus of the Population	Confidence Margin of Response	Sample Size

Study	as of 2020 (15 years old and above)	Level	Error	Distribution	(n)
Metro Manila	9,710,186	95%	5%	50%	385

A 15 years old and above data is presented since this is the closest age bracket presented in the Philippines Statistics Authority.

3.3 Locus of the Study

The research focused on consumer preferences for sustainable packaging in Metro Manila. This densely populated and diverse area allowed us to explore preferences from a wide range of people, providing a broader perspective than a single city. Additionally, Metro Manila's importance as an economic and commercial center made it ideal for understanding national trends in consumer preferences. Finally, choosing Metro Manila offered practical advantages for the research itself, with a larger pool of potential participants and easier access to resources.

3.4 Data Instrument

This study employed primary data collection through an online survey questionnaire. The questionnaire utilized a series of Likert scale questions (ranging from 1 to 6) to capture consumer preferences for sustainable packaging in Metro Manila. Likert scales offered standardized response options, allowing researchers to measure the strength of participants' agreement or disagreement with specific statements. This approach ensured data consistency and facilitated statistical analysis. The data received were manually validated by the researchers in Microsoft Excel to ensure the validity and reliability of each response.

Three key independent variables were explored. First, environmental values were assessed to understand the importance that respondents placed on environmental concerns when making purchasing decisions. Second, perceived product quality was investigated to examine respondents' beliefs regarding the impact of sustainable packaging on product quality or functionality. Finally, price sensitivity was analyzed to determine how sensitive respondents were to price changes when considering products with sustainable packaging. By understanding these factors, the study aimed to gain a clearer picture of what drove consumer preference for sustainable packaging options.

3.5 Data Collection and Procedure

This study gathered data through an online survey. This format allowed for wider reach and easier access for potential participants within Metro Manila. Researchers identified online platforms or social media groups frequented by the target population to distribute the survey link.

Before participating, respondents encountered a brief explanation of the study's background, objectives, and ethical considerations. This information was presented within the survey itself. The online survey was designed to be completed within 10 minutes and utilized Likert scales to measure key variables. These included socio-demographic information, willingness to pay a premium for sustainable packaging (dependent variable), and factors influencing this preference (environmental values, perceived product quality, and price sensitivity).

3.6 Ethical Consideration

This study prioritized the privacy and anonymity of participants. All data collected were treated confidentially and securely in accordance with Republic Act 10173, the Data Privacy Act of 2012. Information was stored securely using passwords and only used for the purposes of this research. Participation in the study was entirely voluntary. Informed consent was obtained before data collection began, and participants had the right to withdraw at any point. To ensure ethical conduct, the data collection instruments underwent an ethics review process by the Don Mariano Memorial State University Research Ethics Committee.

3.7 Results Deployment and Impact

The success of this study was beneficial for companies and businesses in developing their packaging designs, strategizing their marketing messages, setting their prices, and practicing corporate social responsibility through the promotion of sustainability in the market.3.8 Data Analysis.

3.8.1 Econometric Model

This study used a **logistic regression model**. The dependent variable is the willingness to pay for premium packaging and the independent variables are environmental values, perceived product quality, and price sensitivity of consumers.

$$WTPP = \frac{e^{(\beta_o + \beta_1 EV + \beta_2 PQ - \beta_3 PS)}}{1 + e^{(\beta_0 + \beta_1 EV + \beta_2 PQ - \beta_3 PS)}}$$

This equation represents the willingness to pay for premium packaging of consumers (WTPP) based on three variables: environmental value (EV), perceived quality (PQ), and price sensitivity (PS). The β_0 coefficient represents the predicted willingness to pay for premium packaging (WTPP) when all three independent variables (EV, PQ, and PS) are zero. The three coefficients are β_1, β_2, and β_3. The first coefficient, β_1, represents the environmental value of consumers (EV) and its influence on their willingness to pay for premium packaging (WTPP). The positive β_1 suggests a higher environmental value is associated with a greater willingness to pay for premium

packaging. The second coefficient, β_2, represents the influence of perceived quality (PQ) on the willingness to pay for premium packaging of consumers (WTPP). The positive β_2 suggests that people are willing to pay for premium packaging if they perceive the product's higher quality. Lastly, the β_3 coefficient represents the influence of consumers' price sensitivity (PS) on their willingness to pay for premium packaging (WTPP). The negative β_3 suggests that consumers who are sensitive to price are less likely or not willing to pay for premium packaging. The error term, ε, represents the unexplained variance in the willingness to pay for premium packaging (WTPP) of consumers, which are the factors not included in the model that may influence the dependent variable.

3.9 Diagnostic Tests

Likelihood Ratio Chi-Square Test

$$LRT = -2log\left(\frac{L_s(\Theta)}{L_g(\theta)}\right)$$

A likelihood ratio chi-square test statistics are commonly used as criteria for testing the goodness of the fit of the model and independent statistics in studying contingency tables and multivariate analysis. These multivariate analyses include logistic regression and independence in contingency tables. Moreover, a likelihood ratio chi-square statistic is also suggested to be more advantageous when expected frequencies are less than five. (Özdemir & Eyduran, 2005).

Hosmer-Lemeshow Test

$$G^2{}_{HL} = \sum_{j=1}^{k} \frac{(O_j - E_j)^2}{E_j(1 - E_j/n_j)} \sim x_8^2$$

Another test that assesses the calibration or goodness of the fit of the model is the Hosmer-Lemeshow Test. This partitions the observations into groups and then constructs a chi-squared statistic. The chi-squared statistic will then summarize the discrepancies between the number of observed and expected events within all the combinations of the group and the outcome state (Nattino et al., 2020).

Pearson Residual

$$x^2 = \sum_{j=1}^{k} r_j^2$$

$$r_j = \frac{x_j - n\pi 0_j}{\sqrt{n\pi 0_j}}$$

Residuals play an important role in checking for the model's adequacy because it is used to identify discrepancies between models and data. It also carries important information concerned with the appropriateness of assumptions. Furthermore, residuals are based on individual observations in order to identify the underlying patterns in the model (Cordeiro & Simas, 2008).

4. Results and Discussion

Table 1. Age

Sample: 1 1002

Included observations: 1002

Number of categories: 4

Value	Count	Percent
18-24 years old	712	71.06
25-34 years old	148	14.77
35-44 years old	65	6.49
44 and above years old	77	7.68
Total	1002	100.00

Table 1 presents the distribution of individuals aged 18 and above living in Metro Manila within a sample of 1,002 individuals. It categorizes the ages into four groups and presents the count and percentage of each. People aged 18-24 years old sum up to 712 or 71.06% of the sample, which accounts for the majority of individuals in the sample; People aged 25-34 years old sum up to 148 or 14.77% of the sample; People aged 35-44 sum up to 65 or 6.49% of the sample; and lastly, people aged 44 years old and above sum up to 77 or 7.68% of the sample.

Table 2. Educational Attainment

Sample: 1 1002

Included observations: 1002

Number of categories: 4

Value	Count	Percent
Bachelor's Degree or Higher	317	31.64
College Undergraduate	521	52.00
High School Diploma or Equivalent	151	15.07
Less than High School Diploma	13	1.30
Total	1002	100.00

Table 2 presents the distribution of educational attainment of individuals aged 18 years old and above living in Metro Manila within a sample of 1,002 respondents. It categorizes individuals based on their highest level of education and shows the count and percentage of each. People with less than a high school diploma comprise 13 or 1.30% of the sample, which accounts for the smallest percentage in the sample. It is followed by those who have a high school diploma or equivalent, which sum up to 151 or 15.07%, and those who have a bachelor's degree or higher, which sum up to 317 or 31.64% respectively; Lastly, people who are college undergraduates sum up to 521 or 52% of the sample, which accounts for the majority of the sample.

Table 3. Number of Respondents Across Metro Manila

Sample: 1 1002

Included observations: 1002

Number of categories: 17

Value	Count	Percent
Caloocan	106	10.58
Las Pinas	41	4.09
Makati	47	4.69
Malabon	30	2.99
Mandaluyong	25	2.50
Manila	275	27.45
Marikina	19	1.90
Muntinlupa	21	2.10
Navotas	9	0.90
Paranaque	42	4.19
Pasay	22	2.20
Pasig	49	4.89
Pateros	5	0.50
Quezon City	191	19.06
San Juan	8	0.80
Taguig	32	3.19
Valenzuela	80	7.98
Total	1002	100.00

Table 3 presents the distribution of individuals aged 18 and above living in cities within Metro Manila from 1,002 respondents. It categorizes the individuals based on their city of residence and shows the count and percentage of individuals in each city. There are 17 cities in total in Metro Manila, namely Caloocan, Las Pinas, Makati, Malabon, Muntinlupa, Navotas, Paranaque, Pasay, Pasig, Pateros, Quezon City, San Juan, Taguig, and Valenzuela. Pateros (Municipality) count for 5 or 0.50% of the sample, which accounts for the smallest percentage, followed by San Juan and Navotas, which count for 8 or 0.80% and 9 or 0.90% of the sample, respectively. Marikina counts for 19 or 1.90%; Muntinlupa counts for 21 or 2.10%; Pasay counts for 22 or 2.20%; Mandaluyong counts for 25 or 2.50%; Malabon counts for 30 or 2.99%; Taguig counts for 32 or 3.19%; Las Pinas counts for 41 or 4.09%; Paranaque counts for 42 or 4.19%; Makati counts for 47 or 4.69%; Pasig counts for 49 or 4.89%; Valenzuela counts for 80 or 7.98%; Caloocan counts for 106 or 10.58%; Quezon City counts for 191 or 19.06%; Lastly, Manila counts for 275 or 27.45%, which has the highest number of respondents in the sample.

Table 4. Monthly Income or Allowance

Sample: 1 1002

Included observations: 1002

Number of categories: 5

Value	Count	Percent
Less than PHP 10,000.00 (Mas mababa sa PHP 10,000.00)	464	46.31
More than PHP 55,000.00 (Higit sa PHP 55,000.00)	91	9.08
PHP 10,000.00- PHP 25,000.00	285	28.44
PHP 25,001.00- PHP 40,000.00	119	11.88
PHP 40,001.00- PHP 55,000.00	43	4.29
Total	1002	100.00

Table 4 presents the monthly income or allowance distribution of individuals aged 18 years old and above living in Metro Manila within a sample of 1,002 respondents. It categorizes the individuals based on their income or allowance range and shows the count and percentage of individuals in each category. Individuals who have an income of Php 40,001.00 - Php 55,000.00

count for 43 or 4.29%; Individuals who have an income of more than Php 55,000.00 count for 91 or 9.08%; Individuals who have an income of Php 25,001.00 - Php 40,000.00 count for 119 or 11.88%; Individuals who have an income of Php 10,000.00 - Php 25,000.00 count for 285 or 28.44%; Lastly, individuals who have an income of less than Php 10,000.00 have 464 or 46.31%, which accounts for the majority of the sample.

Table 5. Sex or Gender

Sample: 1 1002

Included observations: 996

Number of categories: 2

Value	Count	Percent
Female (Babae)	705	70.78
Male (Lalaki)	291	29.22
Total	996	100.00

Table 5 presents the sex distribution of individuals aged 18 and above living in Metro Manila within a sample of 1,002 respondents. It categorizes the individuals based on their sex, Male and Female, and shows the count and percentage of individuals in each category. The male population of the sample counts for 291 or 29.22% of the sample. The female population of the sample counts for 705 or 70.78% of the sample, which accounts for the majority of the sample.

Table 6. Descriptive Statistics

Dependent Variable: WILLINGNESS_TO_PAY_PREMI

Method: Least Squares

Sample: 1 1002

Included observations: 1002

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.145761	0.117859	1.236740	0.2165
PRICE_SENSITIVITY	0.498375	0.038264	13.02469	0.0000
PERCEIVED_PRODUCT_QUALIT	0.142843	0.040310	3.543640	0.0004
ENVIRONMENTAL_VALUES	0.246956	0.042774	5.773518	0.0000

R-squared	0.611042	Mean dependent var	4.612974
Adjusted R-squared	0.609872	S.D. dependent var	1.281557
S.E. of regression	0.800463	Akaike info criterion	2.396732
Sum squared resid	639.4599	Schwarz criterion	2.416332
Log likelihood	-1196.763	Hannan-Quinn criter.	2.404180
F-statistic	522.6089	Durbin-Watson stat	1.971894
Prob(F-statistic)	0.000000		

Based on Table 6, the regression model demonstrates a strong fit to the data, as evidenced by the R-squared value of 61.1042%, indicating that approximately 61% of the variation in willingness to pay a premium for sustainable packaging can be explained by the combined effects of price

sensitivity, perceived product quality, and environmental values. The adjusted R-squared value of 60.9872 further supports the model's robustness, suggesting that the model's explanatory power remains substantial even after accounting for the number of predictors.

The F-statistic of 522.6089, with a p-value of 0.000000, confirms the overall significance of the regression model, indicating that at least one of the independent variables is significantly related to the dependent variable. Additionally, the Durbin-Watson statistic of 1.971894 and its associated p-value of 0.2165 suggest no significant autocorrelation in the residuals, ensuring the validity of the model's assumptions.

The model's fit, as measured by information criteria like AIC and BIC and the log-likelihood value, further reinforces its strength. Lower values of AIC and BIC, along with a higher log-likelihood, indicate a better-fitting model. In this case, the model's values suggest a reasonable representation of the relationship between consumer preference for sustainable packaging in Metro Manila and the factors of environmental values, product quality, and price sensitivity.

Table 7. Breusch-Godfrey Serial Correlation LM Test

		Prob.	0.66
F-statistic	0.187406	F(1,997)	52

The Breusch-Godfrey Serial Correlation LM Test yielded an F-statistic of 0.187406 and a p-value of 0.6652. Given that the p-value exceeds the significance level of 0.05 reject the null hypothesis of no autocorrelation. The residuals of the regression model are independent, thereby validating one of the key assumptions of the regression analysis.

Table 8. Heteroscedasticity Test: ARCH

F-statistic	0.046250	Prob. F(1,999)	0.8298

The ARCH (Autoregressive Conditional Heteroskedasticity) yielded an F-statistic of 0.046250 and a p-value of 0.8298. Given that the p-value exceeds the significance level of 0.05 reject the null hypothesis of homoscedasticity. This indicates that the assumption of constant variance of errors is likely met in the regression model, thereby validating one of the key assumptions of the regression analysis.

5. Conclusion

The study found that consumer preference for sustainable packaging in Metro Manila is significantly influenced by three primary factors: environmental values, perceived product quality,

and price sensitivity. Consumers with strong environmental values, those who perceive higher product quality associated with sustainable packaging, and those who are less price-sensitive are more likely to choose sustainable options. This suggests that businesses can effectively promote sustainable packaging by highlighting its environmental benefits, maintaining high-quality standards, and implementing strategic pricing strategies.

The study sample primarily comprised young adults aged 18-24, with a significant portion having attained a bachelor's degree. The majority of respondents resided in Manila City and Quezon City. A significant portion of the population had a monthly income or allowance of less than PHP 10,000. These demographic insights suggest that younger, more educated, and female consumers in Metro Manila are particularly receptive to sustainable packaging options. However, affordability remains a crucial factor, as a significant portion of the population has limited financial resources.

The study's findings align with the Hedonic Pricing Model, which suggests that consumers derive utility from both functional and emotional aspects of products. In the context of sustainable packaging, consumers are willing to pay a premium for perceived environmental benefits and social responsibility.

To effectively promote sustainable packaging, businesses should focus on developing high-quality, innovative solutions that resonate with consumers' values. Additionally, affordability should be prioritized to ensure widespread adoption of sustainable packaging practices.

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