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## **Consumer Willingness to Pay a Premium Green Packaging**

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## Abstract

This study examines consumer willingness to pay a premium for green packaging, addressing a critical aspect of sustainability in consumer markets. With escalating environmental concerns, businesses face pressure to adopt eco-friendly packaging despite the associated cost challenges. Green packaging, which encompasses biodegradable, recyclable, and reusable materials, has emerged as a potential solution to reduce environmental impact. However, its higher cost poses a dilemma for companies balancing profitability with sustainability.

Through a survey-based methodology, this research collected data from 137 respondents across diverse demographic groups, analyzing their purchasing behaviors and preferences. Key variables, such as willingness to pay, sales performance, gender, and income level, were evaluated using regression analysis to identify significant trends and predictors. The findings reveal a positive and significant relationship between consumer willingness to pay and the sales of green-packaged products, highlighting the importance of aligning business strategies with consumer values.

The study underscores the role of effective marketing, transparent communication, and targeted pricing strategies in fostering consumer adoption of green packaging. It also discusses the barriers businesses face, including production costs and consumer skepticism towards greenwashing, while offering insights into overcoming these challenges. The results contribute valuable knowledge for businesses and policymakers aiming to promote sustainable practices, supporting the broader goals of environmental conservation and corporate responsibility.

Keywords: green packaging, consumer behavior, sustainability.

## **Chapter One Introduction**

Sustainability has become a significant trend in consumer behavior, reflecting a growing awareness and concern for the environment. As global environmental issues, such as climate change and waste management, intensify, consumers are increasingly demanding products that contribute to sustainability (Pérez et al., 2019). One crucial aspect of this shift is the heightened demand for green packaging.

Green packaging refers to packaging solutions that are designed to have minimal impact on the environment. This includes biodegradable materials that break down naturally without harming the ecosystem, recyclable materials that can be reprocessed into new products, and reusable packaging that reduces waste (Shaikh et al., 2021). For instance, companies are now exploring alternatives like plant-based plastics, compostable films, and reusable containers.

The primary market challenge with green packaging is its generally higher cost compared to traditional packaging. Many businesses face a dilemma, should they adopt sustainable packaging options and potentially increase their costs, or should they continue with cheaper, less environmentally-friendly options to maintain profit margins? (Wandosell et al., 2021) The research gap lies in a lack of comprehensive data on whether consumers are willing to pay a premium for these environmentally friendly solutions, which is crucial for businesses when making strategic decisions.

The primary objective of this study is to assess consumer willingness to pay a premium for products with green packaging. To achieve this, we will explore several secondary objectives, including identifying demographic factors such as age, gender, and income level that influence willingness to pay, evaluating the direct impact of green packaging on overall sales, and analyzing broader consumer behavior trends toward sustainable product choices.

Supporting the shift toward sustainable practices in the commercial sector is of great importance. This study aims to provide valuable insights that could drive a significant change in packaging strategies among businesses, encouraging more to adopt green packaging solutions. Understanding consumer values and priorities will help companies develop data-driven marketing strategies that attract environmentally conscious consumers. Furthermore, enhancing sustainability within consumer markets can contribute to broader environmental goals, such as reducing waste and lowering carbon footprints.

This study will focus on specific demographic groups to ensure a comprehensive analysis, although it will inherently be limited by these boundaries. Products across various categories, including food, personal care, and household goods, will be analyzed. Control variables such as gender and income level will be included to account for their potential influence on purchasing decisions.

Data collection will involve surveys and focus groups to gather consumer insights, alongside market analysis to assess the impact on sales. Descriptive analytics will summarize the gathered data, providing insights into central tendencies, variances, and frequencies. Regression analysis will be employed to examine the relationship between green packaging and key outcomes such as consumer purchase intentions, willingness to pay, and sales performance, controlling for potential confounding variables. Robustness tests, including sensitivity analysis, bootstrapping, and cross-validation, will be conducted to validate the reliability and consistency of the regression results. Our sampling methods will ensure a representative demographic cross-section, and data sources will include reputable consumer and business databases.

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This study is anticipated to provide critical contributions to the understanding of consumer behavior regarding sustainable packaging. The insights gained will help businesses make informed decisions about adopting green packaging and developing pricing strategies that reflect consumer willingness to pay a premium. By identifying key factors that influence consumer preferences and purchase decisions, companies can tailor their marketing and product development efforts more effectively. This, in turn, can foster a shift toward more environmentally responsible practices in the marketplace. Moreover, the study's findings can inform policymakers about the potential benefits and challenges associated with promoting sustainable packaging, guiding regulatory frameworks and incentives that support eco-friendly initiatives. Ultimately, this research aims to bridge the gap between consumer expectations and business practices, encouraging a collaborative approach to achieving sustainability goals.

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## **Chapter 2 Literature Review**

## 2.1 What is Green Packaging?

Green packaging is a term that refers to packaging solutions designed to use materials and procedures that have minimal impact on the environment. Often called sustainable or eco-friendly packaging, this type of packaging aims to reduce waste, lower carbon emissions, and promote biodegradability and recycling (Pauer et al., 2019). The primary goal is to shift away from conventional materials that are harmful to the environment and instead, incorporate alternatives that are more sustainable. Such materials include recycled paper, plant-based polymers, and other renewable resources, which have a lower environmental footprint(Tyagi et al., 2021). The objective of green packaging extends beyond just the materials used; it encompasses the entire lifecycle of the packaging mot only serves its purpose effectively but also minimizes pollution and conserves resources throughout its entire lifecycle. By adopting green packaging solutions, businesses can contribute to a more sustainable future, addressing consumer demand for eco-friendly products while also reducing their ecological impact. This comprehensive strategy is essential in the fight against environmental degradation and in fostering a culture of sustainability that benefits both the planet and society as a whole(Nguyen et al., 2020; Wandosell et al., 2021).

#### 2.2 Consumer Behavior and Sustainable Practices

The significance of sustainable packaging has surged over recent years, driven by growing environmental concerns and heightened consumer demand for eco-friendly solutions. With the increasing awareness of the environmental impact of conventional packaging, businesses face mounting pressure to adopt more sustainable practices. The concept of consumer willingness to pay (WTP) a premium for green packaging and examines the impact of such packaging on product sales. Understanding this relationship is vital for businesses aiming to align their strategies with sustainability trends while maintaining profitability. Additionally, it provides a framework for policymakers to design effective regulations and incentives that promote sustainable consumption.

Historical shifts in consumer behavior reveal a progressive trend towards greater environmental

consciousness. Early research indicated that consumers were largely indifferent to sustainability issues, often prioritizing convenience and cost over environmental impact (Min & Galle, 1997). However, more recent studies have shown a significant shift towards prioritizing eco-friendly products, driven by increased awareness facilitated by media, education, and social influence (Pop et al., 2020). The role of social media in spreading information about environmental issues cannot be overstated. Additionally, the Theory of Planned Behavior (Ajzen, 2020) has often been applied to understand how attitudes towards sustainability translate into purchase intentions, highlighting the importance of perceived behavioral control and subjective norms in shaping consumer decisions.

#### 2.3 Consumer Willingness to Pay

Consumer willingness to pay (WTP) a premium for green packaging is a critical factor that significantly influences market dynamics and business strategies. Willingness to pay refers to the maximum price a consumer is willing to pay for a product or service, reflecting their perceived value of the item beyond mere functionality and necessity (Dwivedi et al., 2018). This willingness to pay is often driven by a combination of emotional, ethical, and practical considerations. Numerous studies have explored the determinants of willingness to pay for green packaging, revealing that multiple factors such as environmental concern, perceived product quality, and socioeconomic status play significant roles. For instance, individuals with higher environmental awareness are more likely to feel a moral obligation to support sustainable practices and thus are willing to invest more in products that align with their values. Additionally, those with higher disposable incomes are generally more capable of accommodating the premium prices associated with sustainable packaging solutions (Dwivedi et al., 2018; Qiao & Dowell, 2022).

Willingness to pay is particularly pronounced among younger demographics, who are more attuned to ethical consumption and sustainability issues. These younger consumers, including Millennials and Generation Z, often prioritize sustainability in their purchasing decisions, influenced by social media, education, and a cultural shift toward environmental responsibility (Kuncoro & Kusumawati, 2021). Their preferences reflect broader societal trends towards sustainability, influencing companies to adopt green practices.

Understanding these factors is essential for businesses to develop targeted marketing strategies and product offerings that align with consumer values. By recognizing the attributes that drive willingness to pay, businesses can tailor their messaging, pricing, and product development processes to meet consumer expectations. This could involve transparent communication about the environmental impact of their products, leveraging eco-labels and certifications, and engaging in storytelling that connects with consumers' values. Ultimately, catering to this growing sustainability trend can not only enhance brand loyalty and reputation but also provide a competitive edge in increasingly eco-conscious markets. By investing in comprehensive consumer research and continuously adapting to evolving consumer preferences, businesses can sustainably grow their market share while contributing positively to environmental conservation.

#### 2.4 Conceptualizing Green Packaging and Its Impact on Sales

Green packaging, also known as sustainable or eco-friendly packaging, refers to packaging solutions designed to use materials and procedures that have minimal impact on the environment. The primary goal of green packaging is to reduce waste, lower carbon emissions, and promote

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biodegradability and recycling. It often incorporates materials such as recycled paper, plant-based polymers, and other renewable resources that are less damaging to the environment compared to conventional packaging solutions. The objective extends beyond just the choice of materials; it encompasses the entire lifecycle of the packaging—from production to disposal (Zhong et al., 2020). This holistic approach ensures that the packaging not only serves its purpose effectively but also minimizes pollution and conserves resources throughout its lifespan. By adopting green packaging solutions, businesses can contribute to a more sustainable future, addressing consumer demand for eco-friendly products while also reducing their ecological impact.

The impact of green packaging on sales is significant and closely tied to how well it is conceptualized and implemented. Empirical studies consistently show a positive correlation between green packaging and sales performance. Products adorned with green packaging often see increased market performance, especially when complemented by effective marketing strategies such as ecolabeling and sustainability certifications (Choi & Lee, 2020). Comparative analyses across various sectors, including food and beverages, personal care, and household products, demonstrate that green-packaged products outperform their non-green counterparts. This trend underscores the importance of sustainability as a driver of consumer choice and market success. Moreover, businesses adopting green packaging can capitalize on the growing consumer preference for eco-friendly products, thereby enhancing their competitive edge and profitability.

The development of green packaging often involves significant research and development investments, but the long-term benefits, including cost savings from reduced waste and increased customer satisfaction, can outweigh the initial expenditure. By monitoring sales data and consumer feedback, companies can make informed decisions about future packaging investments and promotional strategies. The positive sales impact also suggests that consumers are not only supportive of green packaging in theory but are willing to reflect this support in their purchasing decisions, highlighting a tangible benefit for businesses that adopt sustainable practices. The integration of green packaging strategies can enhance brand image, foster customer loyalty, and drive higher sales, making it an essential consideration for businesses aiming to thrive in a sustainability-conscious market. By understanding and leveraging the advantages of green packaging, companies can not only meet regulatory requirements and consumer expectations but also set an example in the industry for environmental stewardship.

#### 2.5 Marketing and Pricing Strategies, Challenges, and Barriers

Effective marketing and pricing strategies are crucial in fostering consumer adoption and willingness to pay a premium for green packaging. These strategies include clear eco-labeling, storytelling about sustainability efforts, and third-party certifications that validate the environmental benefits of the packaging (Krah et al., 2019). Psychological factors such as perceived value, trust in environmental claims, and emotional attachment to sustainable practices significantly influence consumer interest (Shimul & Cheah, 2023). Pricing strategies must balance the higher production costs of green packaging with consumers' willingness to pay (WTP). Transparent communication about the cost structure and environmental benefits of green packaging can enhance consumer trust and justify the premium price, leading to increased acceptance and purchase intention.

However, despite the evident benefits of green packaging, businesses face several challenges and barriers in its widespread adoption. One of the primary challenges is the higher production costs associated with sustainable materials. These materials often require advanced technology and more expensive raw resources, making it difficult for businesses, especially small and medium-sized enterprises (SMEs), to absorb the costs without significant price increases (Wu et al., 2021)t. Logistical complexities in supply chain management pose another barrier, as companies must adapt their operations to handle recyclable, compostable, or biodegradable materials correctly. There is the risk of consumer skepticism towards greenwashing, where companies falsely claim environmental benefits. This skepticism can erode consumer trust and hinder the effectiveness of genuine sustainability efforts. Greenwashing not only damages the reputation of the offending company but also creates a broader mistrust that can affect the entire industry. Businesses must, therefore, be vigilant and transparent in their sustainability claims, ensuring they back up marketing messages with actual environmental actions.

Addressing these challenges requires coordinated efforts from businesses, policymakers, and stakeholders to create a supportive ecosystem for sustainable practices. Policy interventions such as subsidies for sustainable materials, tax incentives for companies adopting green packaging, and public awareness campaigns to educate consumers about the importance and benefits of genuine eco-friendly packaging are essential. Investing in comprehensive marketing campaigns that leverage social media, influencer endorsements, and interactive content can further amplify the message, reaching a broader audience and encouraging widespread adoption of green packaging. Ultimately, by overcoming these challenges and implementing effective marketing and pricing strategies, businesses can harness the growing demand for sustainable products and achieve long-term profitability while contributing positively to environmental conservation.

#### 2.6 Future Trends and Directions

The future of green packaging is closely linked to the evolution of regulatory frameworks and their ability to adapt to emerging technologies and changing consumer behaviors. Innovations such as biodegradable polymers, plant-based plastics, and smart packaging solutions are at the forefront of this evolution, offering enhanced functionality and improved environmental performance(Zhong et al., 2020). These advancements cater to the evolving needs of both consumers and businesses, paving the way for more sustainable packaging solutions that do not compromise on quality or efficiency.

Consumer trends indicate a continued shift towards ethical and sustainable consumption, underscoring the importance of innovative packaging solutions that align with these values. Future research should explore new sustainable materials, advanced manufacturing techniques, and better methods for measuring the environmental impact of packaging. Additionally, regulatory frameworks must evolve to keep pace with these innovations, providing clear guidelines and support for the adoption of new technologies. This could involve setting standards for biodegradable materials, incentivizing research, and development, and creating a conducive environment for public-private partnerships that drive sustainability forward.

Interdisciplinary collaborations among scientists, industry experts, and policymakers will be crucial in driving the advancement and adoption of green packaging technologies. By investing in research and development, businesses can stay ahead of the curve and meet the growing demand for sustainable products while minimizing their environmental impact. Policymakers, on the other hand, must ensure that regulations are flexible enough to accommodate new developments while stringent enough to prevent greenwashing and ensure genuine environmental benefits.

The integration of robust regulatory frameworks with ongoing innovations in green packaging can significantly alter the market landscape. Businesses that anticipate and adapt to these changes will

not only enhance their competitive edge but also contribute positively to global sustainability efforts. The future of green packaging is promising, with potential advancements poised to transform how products are packaged and perceived, ultimately leading to a more sustainable and environmentally conscious society.

The insights gathered from this comprehensive literature review suggest that consumer willingness to pay a premium for green packaging is a significant factor influencing sales. Businesses can leverage this by adopting effective marketing and pricing strategies while ensuring transparency to avoid greenwashing. Policymakers also play a crucial role in supporting these initiatives through conducive regulations and incentives, fostering an environment that promotes sustainable practices. Ultimately, bridging the gap between consumer expectations and business practices can drive progress towards a more environmentally responsible marketplace. Furthermore, continuous innovation and research are essential to overcome existing challenges and capitalize on future opportunities in green packaging, ensuring sustainable growth and development.

# **Chapter 3 Methodology**

### **3.1 Research Method**

This research study was conducted to understand consumer attitudes and behaviors regarding environmentally friendly packaging. The survey method was employed, utilizing a Likert scale to measure respondents' willingness to pay a premium. The scale ranged from 1 (strongly disagree) to 5 (strongly agree), 1 (not very familiar) to 5 (very familiar) (Castleberry & Peeters, 2023). The methodology of this study was carefully crafted to provide robust and comprehensive insights into consumer willingness to pay a premium for green packaging. By leveraging diverse distribution channels and employing rigorous data analysis techniques, the study aimed to uncover the key factors influencing consumer behavior and support the development of effective marketing strategies for environmentally friendly packaging.

#### **3.2 Survey Design**

The survey was meticulously designed to capture comprehensive data on various aspects, such as demographic information: gender, income level. Environmental awareness, questions aimed at gauging the level of concern and awareness about environmental issues among respondents. Willingness to pay, specific questions to assess the extent to which respondents are willing to pay more for green packaging. Factors influence for purchasing items to measure the impact of purchasing was because of environmental impact, health and safety concerns, product quality, price, or brand reputation on respondents' purchasing decisions. The survey included both closed-ended questions for quantitative analysis and a few open-ended questions to gather qualitative insights.

## 3.3 Sampling and Data Collection

This survey was conducted online, 137 people took part in the poll throughout the course of its two-week duration. In order to guarantee that the results could be applied to a larger population, the sampling approach sought to reflect a variety of demographic groups. There were respondents in the sample of various genders and income levels.

To reach a diverse and representative sample, the survey was distributed through multiple channels: WeChat personal messages direct messages were sent to individuals to invite personal participation and ensure a more personalized approach. WeChat groups the survey was shared in various groups to leverage community dynamics and peer influence, encouraging higher engagement. The survey link was posted on Instagram stories and feeds, targeting users who are active on social media and might have strong environmental concerns. Emails were sent to a curated list of contacts, targeting those who may prefer a more formal and traditional mode of communication. These channels were chosen to cover a wide range of demographics and social networks, maximizing the reach and diversity of the sample.

#### 3.4 Data Analysis

Upon collection, the survey data was processed and analyzed using STATA. The following analyses were conducted: Descriptive statistics mean scores, standard deviations, and frequency distributions were calculated to summarize the data. Correlation Analysis, to identify significant relationships between demographic factors, environmental awareness, social influence, and willingness to pay. Regression Analysis, to determine the predictive power of various factors on the willingness to pay a premium for green packaging. Robustness test, robustness test were performed to ensure the reliability and stability of the findings. This involved checking for consistency across different sub-samples and verifying that the results were not sensitive to any particular group or bias.

#### 3.5 Variables

#### 3.5.1 Dependent Variable (Y): Sales of Products with Green Packaging

The sales of products with green packaging reflect consumer demand for sustainable options and the growing awareness of environmental issues. This variable is crucial for companies aiming to adopt eco-friendly practices and for measuring the market's shift towards sustainability. Tracking these sales can provide insights into consumer preferences, the effectiveness of green marketing strategies, and the overall impact of sustainable practices on business performance.

#### 3.5.2 Independent Variable (X): Consumer Willingness to Pay

Consumer Willingness to Pay represents the extent to which consumers are willing to spend extra money on products that come in environmentally friendly packaging. This variable was measured using a Likert scale, where respondents rated their agreement with statements about paying a premium for green packaging on a scale from 1 (strongly disagree) to 5 (strongly agree). High scores indicate a greater willingness to pay more for such products, reflecting positive consumer attitudes towards environmental sustainability(Biswas & Roy, 2016).

#### 3.5.3 Control Variable

To ensure the robustness of our findings, we included two control variables in our analysis: gender and income level. These variables were chosen based on existing literature suggesting their potential influence on both consumer willingness to pay and purchasing behavior. Gender: This variable was coded as a binary indicator (1= female, 2= male). Previous research has shown that women tend to exhibit higher environmental concern and are more likely to support sustainable products compared to men (Biswas & Roy, 2016). Income Level: Income was measured on an ordinal scale representing different income brackets. Higher income levels often correlate with a greater ability to afford premium-priced products, including those with green packaging (Qiao & Dowell, 2022).

#### 3.5.4 Variables Measured

In our study, we examined the relationship between consumer willingness to pay a premium for green packaging (X) and the sales of products with green packaging (Y). Additionally, we controlled

for demographic variables such as gender and income level to isolate the impact of the primary variables. The data was analyzed using Stata to conduct summation, regression analysis, and robustness tests. Descriptive statistics were first calculated to summarize the main variables. Then, multiple regression analysis was performed to assess the impact of consumer willingness to pay on sales of green packaging products, while controlling for gender and income level. Robustness tests were conducted to verify the consistency of the results across different sub-samples and to ensure that the findings were not sensitive to specific groups or biases.

### 3.6 Model

To investigate the relationship between consumer willingness to pay a premium for green packaging and the sales of products with green packaging, we employed two regression models: a baseline regression model and an extended model with control variables.

(1) Baseline regression model.

 $Sales = \alpha + \beta_1 Willingness + \varepsilon$ 

(2) Added with control variables

 $Sales = \alpha + \beta_1 Willingness + \beta_2 Gender + \beta_3 Income + \varepsilon$ 

### **3.7 Ethical Consideration**

All respondents were informed about the purpose of the study, their rights as participants, and the confidentiality of their responses. Consent was obtained before participation. Data was anonymized to protect the identities of the respondents. Personal information was kept confidential and used solely for the purposes of this study. Participation was entirely voluntary, with respondents free to withdraw at any time without any consequences.

## **Chapter 4 Discussion**

#### 4.1 Descriptive Analysis

Table 1 presents the descriptive statistics for the variables included in the study: Sales, Willingness, Gender, and Income, based on 137 observations. Starting with Sales, the mean value is 2.318, with a standard deviation of .532. This suggests that sales typically are around 2.318 units, with a moderate amount of variability. The minimum sales value recorded is 1, while the maximum is 3.5, indicating a relatively narrow range.

Willingness to engage, another key variable, has a mean of 3.414 and a slightly higher standard deviation of .622. This indicates that on average, willingness is somewhat high, but there is some variation around this average. The willingness scores range from 2 to 5, displaying a broader spectrum of responses compared to sales. The Gender variable has a mean of 1.577 and a standard deviation of .496, with values ranging from 1 to 2. Given that this is likely a binary variable (Female=1 and Male=2), the mean close to 1.5 suggests a fairly balanced distribution between genders within the sample. Income displays a mean value of 2.81 and a larger standard deviation of 1.541, highlighting

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considerable variation in income levels among participants. The income values range broadly from 1 to 5, suggesting the inclusion of individuals from diverse socioeconomic backgrounds.

Variable	Obs	Mean	Std. Dev.	Min	Max	
Sales	137	2.318	.532	1	3.5	
Willingness	137	3.414	.622	2	5	
Gender	137	1.577	.496	1	2	
Income	137	2.81	1.541	1	5	

 Table 1. Descriptive Statistics

Overall, the descriptive statistics indicating a moderately high average willingness, balanced gender composition, and diverse income levels. The variability within each variable gives a comprehensive view of the participant characteristics which aids in understanding the broader context of subsequent analyses.

### **4.2 Basic Regression Results**

The results presented in Table 2 from the linear regression analysis indicate a significant relationship between willingness and sales. The coefficient for willingness is .461, suggesting that for every one unit increase in willingness, sales are expected to increase by approximately .461 units. The standard error for this coefficient is .062, leading to a high t-value of 7.44, which is statistically significant with a p-value of zero. This implies a strong confidence in the effect of willingness on sales.

The constant term, which represents the intercept, has a coefficient of .743 with a standard error of .215. Its t-value is 3.46, which is also statistically significant with a p-value of .001. This suggests that when willingness is zero, the expected sales are .743 units, though this is less impactful since willingness is expected to vary naturally.

Additional parameters indicate that the mean of the dependent variable (sales) is 2.318, with a standard deviation of .532, based on 137 observations. The R-squared value of .291 indicates that approximately 29.1% of the variability in sales can be explained by the willingness variable. The F-test value is 55.314, with a corresponding p-value of less than .001, indicating that the overall model fit is statistically significant.

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Sales	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Willingness	.461	.062	7.44	0	.338	.584	***
Constant	.743	.215	3.46	.001	.318	1.169	***
Mean dependent v	ar	2.318	SD depe	endent var	0.532		
R-squared		0.291	Number	of obs	137		
F-test		55.314	Prob > F	7	0.000		
Akaike crit. (AIC)		171.625	Bayesia	n crit. (BIC	) 177.4	65	

Table 2. Li	near Regro	ession
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\*\*\* p<.01, \*\* p<.05, \* p<.1

The Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) are reported at 171.625 and 177.465, respectively. These are used for model selection, and in this context, lower values may indicate a better model fit, though comparison to alternative models would be necessary for a definitive conclusion. Overall, the analysis demonstrates a significant positive relationship between willingness and sales, underscored by the strong statistical significance of the

coefficients and overall model.

#### **4.3 Robustness Check**

Table 3 displays the results from the baseline regression analysis, examining the impact of several variables on sales across three different models. In all models, willingness consistently shows a positive and significant relationship with sales. In Model 1, the coefficient for willingness is 0.460 with a standard error of 0.0625, yielding a highly statistically significant result (p < 0.01). This suggests that an increase in willingness by one unit is associated with a 0.460 unit increase in sales. This pattern is corroborated in Model 2 and Model 3, where the coefficients slightly increase to 0.481 and 0.479, respectively, with similarly significant standard errors.

Gender, on the other hand, does not show a significant effect on sales in any of the models. The coefficients are 0.0204, 0.0204, and 0.0373 in Models 1, 2, and 3, respectively—all with standard errors large enough that the effects are not statistically significant.

Income also appears to have a negligible effect on sales, with coefficients of -0.0383 and -0.0399 in Models 2 and 3. Although the coefficients are slightly negative, they are not significant, as indicated by the standard errors and the lack of statistical significance.

The constant terms in all models are positive and statistically significant, with coefficients ranging from 0.716 to 0.783. This implies that when all the independent variables are zero, there is still a baseline level of sales, as indicated by these coefficients. Regarding the goodness-of-fit measures, the R-squared values for all models are relatively consistent, ranging from 0.291 to 0.304. This suggests that approximately 29.1% to 30.4% of the variance in sales can be explained by the independent variables included in the models.

Table 3. Baseline Regression				
	(1)	(2)	(3)	
VARIABLES	Sales	Sales	Sales	
Willingness	0.460***	0.481***	0.479***	
	(0.0625)	(0.0631)	(0.0634)	
Gender	0.0204		0.0373	
	(0.0783)		(0.0787)	
Income		-0.0383	-0.0399	
		(0.0255)	(0.0258)	
Constant	0.716***	0.783***	0.735***	
	(0.240)	(0.216)	(0.239)	
Observations	137	137	137	
R-squared	0.291	0.302	0.304	
Control Variable	Yes	Yes	Yes	
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Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In conclusion, the regression analysis highlights that willingness is a crucial determinant of sales, consistently showing a strong positive and significant impact. Gender and income, however, do not exhibit significant effects. The models themselves explain a modest but meaningful portion of the

variance in sales, underscoring the importance of willingness in understanding sales performance.

## **Chapter 5 Conclusion**

The descriptive statistics reveal significant variability in the dataset, containing 137 observations. Sales, on average, hover around 2.318 units with moderate variability, while willingness to engage shows a higher mean of 3.414 and a broader range of responses, suggesting a generally favorable attitude towards green packaging among consumers. Gender distribution among participants is nearly balanced, indicating that the results are representative of both males and females. Income, however, shows considerable variability, encompassing a wide array of socioeconomic backgrounds, thus enriching the dataset with diverse consumer profiles. The regression analysis indicates a significant positive relationship between willingness to pay a premium for green packaging and sales. The coefficient for willingness (.461) is both statistically significant and practically meaningful, implying that an increase in willingness directly boosts sales. The constant term and high t-values further bolster the robustness of these findings. The model explains approximately 29.1% of the variability in sales, as demonstrated by the R-squared value, signifying a moderate but notable impact. Baseline regression models affirm these findings with consistent positive and significant coefficients for willingness across different models. Gender and income, however, do not exhibit significant impacts on sales, suggesting that willingness is a more potent predictor of consumer behavior in this context.

Despite the compelling findings, several limitations warrant caution. First, the study's sample size of 137 observations, while adequate, is relatively small, potentially limiting the generalizability of the results. Secondly, the data is cross-sectional, capturing a single point in time, which may not account for temporal dynamics or longitudinal trends in consumer behavior. Additionally, the study relies on self-reported measures of willingness, which could be subject to social desirability bias. Consumers might overstate their willingness to pay a premium for green packaging, leading to inflated coefficients. The absence of significant effects of gender and income on sales also calls for deeper exploration, as these factors typically influence consumer purchasing decisions. Lastly, while the regression models explain a meaningful portion of the variance in sales, other unaccounted variables might also play a significant role. Future research could incorporate additional predictors and employ longitudinal methods to build a more comprehensive model.

In conclusion, the research underscores the critical role of consumer willingness to pay a premium for green packaging in driving sales. While the study offers valuable insights, addressing its limitations through broader samples, longitudinal data, and additional predictors would strengthen the findings. Nonetheless, businesses can leverage the demonstrated positive willingness-sales relationship to enhance green packaging initiatives, thereby aligning with both consumer preferences and environmental sustainability goals.

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