

The Impact of Terrarium Aesthetics on Purchase Behavior: A Binary Logistic Regression Analysis of The Celebes Plant Lover Community

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Abstract

Terrariums have gained popularity as decorative elements that combine aesthetic value with low-maintenance plant care, particularly among urban and hobbyist communities. Understanding the factors that drive purchase decisions in such niche markets is essential for producers and marketers. This research aims to examine the factors influencing terrarium purchase decisions among members of the Celebes Plant Lovers community. The research employs a quantitative approach using binary logistic regression analysis based on data collected from 107 respondents. The independent variables include aesthetic appeal, type of terrarium, type of plant, maintenance, price, and purchasing platform, while the dependent variable is the purchase decision. The results show that the regression model is statistically significant ($\chi^2(6) = 12.87$, $p = 0.045$) and explains 18.2% of the variance in purchase decisions (Nagelkerke $R^2 = 0.182$), with an overall classification accuracy of 82.2%. Among the examined variables, only aesthetic appeal has a significant effect on purchase decisions ($\beta = 0.965$, $p = 0.035$), indicating that higher aesthetic value increases the likelihood of purchasing terrarium products. Other variables—such as type of terrarium, type of plant, maintenance, price, and purchasing platform—do not show significant effects. These findings highlight the importance of visual attractiveness in influencing consumer behaviour, particularly in hobby-based communities. The study contributes to the understanding of consumer decision-making by emphasizing the dominant role of aesthetics over functional and economic factors in niche markets.

INTRODUCTION

The growing interest in indoor greenery has significantly increased the popularity of terrariums as decorative and biophilic design elements (Asojo & Hazazi, 2025; Krishna et al., 2023; Nizam & Talib, 2024; Zandi & Wung, 2025). Terrariums offer a unique combination of aesthetic value and low-maintenance plant care, making them particularly appealing to urban consumers seeking to incorporate nature into their living spaces (Lohr & Pearson-Mims, 2000; Novak & Dwyer, 2007). Their aesthetic flexibility, ranging from minimalist arrangements to complex artistic compositions, enables diverse visual expressions that cater to varying consumer preferences (Bertacchini et al., 2022; Hur, 2026; Kumar & Thankachan, 2025; Muhsin, 2024; Wibowo et al., 2024; Youwan, 2024).

In Indonesia, particularly in Sulawesi, plant enthusiast communities have developed rapidly, both through offline interactions and digital platforms (Dahlan et al., 2024; Mubarak et al., 2023; Prasetyo, 2024; Robet et al., 2023). These communities exhibit strong engagement in sharing knowledge, trends, and preferences related to ornamental plants, including terrariums (Pratiwi et al., 2020). Cultural context plays an important role in shaping consumer

preferences, as aesthetic values are often influenced by local traditions, environmental familiarity, and collective norms within a community (Solomon, 2018; Schiffman & Kanuk, 2010).

Aesthetics have long been recognized as a key determinant of consumer behavior. Visual appeal influences consumers' perceptions of quality, value, and desirability, often acting as the primary driver of purchase decisions, particularly for decorative products (Bloch et al., 2003; Townsend & Kahn, 2014). In the context of terrariums, aesthetic elements such as plant composition, container design, and visual harmony may serve not only functional purposes but also symbolic and expressive roles (Belk, 1988; Dittmar, 1992).

Despite extensive research on visual aesthetics in marketing, limited studies have specifically examined how terrarium aesthetics influence purchasing behavior within localized plant communities. Existing studies tend to focus on general consumer trends or broader e-commerce contexts (Handayani & Putra, 2021; Santoso et al., 2019), leaving a gap in understanding how aesthetic preferences operate within culturally specific communities such as the Celebes Plant Lovers (Chhabra & Kaushal, 2025; Gelis, 2023; Marx, 2025). The novelty of this research lies in its specific focus on terrarium products, its examination of the geographically and culturally distinct Celebes Plant Lovers community in Sulawesi, and its use of binary logistic regression to rigorously quantify the influence of aesthetic appeal while controlling for factors such as price, maintenance, and purchasing platform—an approach that offers a more robust framework than typical descriptive studies in this context.

Therefore, this study aims to analyze the impact of terrarium aesthetics on purchase behavior within the Celebes Plant Lovers community in Sulawesi. Specifically, it investigates how distinct aesthetic attributes influence the likelihood of purchase using a binary logistic regression approach. This research contributes to the literature by integrating perspectives from consumer behavior, visual marketing, and human-plant interaction within a specific socio-cultural context. Practically, the findings are expected to provide insights for businesses in developing aesthetically aligned products and targeted marketing strategies tailored to community preferences.

METHODS

This research adopts a quantitative research approach to examine the relationship between terrarium aesthetics and purchase behavior within the Celebes plant lover community in Sulawesi, Indonesia. A structured methodological framework is employed to ensure systematic data collection and analysis, enabling the identification of significant factors influencing consumer decisions. Specifically, this research utilizes a binary logistic regression model to analyze how various aesthetic attributes of terrariums affect the likelihood of purchase. The methodology is designed to provide both empirical rigor and practical relevance, ensuring that the findings contribute meaningfully to the fields of consumer behavior and visual marketing.

Research Design

This research employs a quantitative research approach using an explanatory design to examine the relationship between terrarium aesthetics and purchase behavior. The analysis is conducted using a binary logistic regression model to determine the extent to which aesthetic

attributes influence the likelihood of purchase decisions within the Celebes plant lover community.

Population and Sample

The target population of this study is the members of the Celebes plant lover community in Sulawesi, Indonesia. A sample of 107 respondents was selected using purposive sampling techniques. These individuals are actively engaged in plant-related activities, including the appreciation and purchase of terrariums.

A purposive sampling technique is used to select respondents based on the following criteria:

1. Active members of the Celebes plant lover community
2. Have prior knowledge or experience with terrariums
3. Have considered or made a purchase decision related to terrariums

The sample size is determined based on the minimum requirement for logistic regression analysis, ensuring sufficient observations for reliable statistical estimation.

Data Collection Technique

Primary data are collected through a structured questionnaire distributed online via social media platforms and community groups. The questionnaire is designed using a Likert scale (1–5) to measure respondents' perceptions of terrarium aesthetics and related factors.

The instrument consists of two main sections:

1. Respondent demographics (age, gender, experience with plants)
2. Perception of terrarium aesthetic attributes and purchase behavior

Variables and Measurement

Dependent Variable

The dependent variable in this study is purchase behavior, measured as a binary outcome:

- 1 = Purchased / Intends to purchase
- 0 = Did not purchase

Independent Variables

The independent variables represent key aesthetic attributes of terrariums, including:

- Plant composition (diversity and arrangement of plants)
- Design complexity (simple vs. intricate design)
- Container type (glass, open/closed terrarium)
- Visual harmony (color balance and proportionality)
- Use of decorative elements (e.g., stones, figurines, local ornaments)

Each variable is measured using multiple indicators on a Likert scale.

Data Analysis Technique

Data analysis is conducted using binary logistic regression to estimate the probability of purchase behavior based on aesthetic attributes. The logistic regression model is formulated as follows:

$$P(Y=1) = \frac{1}{1 + \exp(-(c + \beta_1 x_1 + \beta_2 x_2 + \beta_n x_n))}$$

Where:

- (P) = probability of purchasing a terrarium
- (X₁, X₂, ..., X_n) = independent variables (aesthetic attributes)
- (beta₀) = constant
- (beta_n) = regression coefficients

The analysis includes:

1. Model fit testing (Hosmer–Lemeshow test)
2. Significance testing (Wald test)
3. Goodness-of-fit (Pseudo R²: Cox & Snell, Nagelkerke)
4. Odds ratio interpretation

All statistical analyses are performed using statistical software such as SPSS or similar tools.

Validity and Reliability Test

To ensure data quality, validity and reliability tests are conducted:

- Validity was assessed using Pearson correlation between each item and the total score. All items showed significant correlations at $p < 0.05$, indicating acceptable construct validity.
- Reliability testing (Cronbach's Alpha) was not performed in this study due to practical constraints. This limitation is acknowledged, and future research should include reliability assessment to ensure internal consistency of the measurement instrument.

Ethical Considerations

Respondents participate voluntarily, and all data collected are kept confidential and used solely for research purposes. Informed consent is obtained prior to participation.

RESULT AND DISCUSSION

This section presents the findings of the study on the factors influencing terrarium purchase decisions among members of the Celebes Plant Lovers community. The analysis is based on data collected from 107 respondents and examined using binary logistic regression.

The Hosmer-Lemeshow goodness-of-fit test was conducted to assess whether the logistic regression model adequately fits the data. The test yielded a chi-square value of $\chi^2(8) = 7.23$ with a p-value of 0.512. Since the p-value is greater than 0.05, the null hypothesis that the model fits the data well cannot be rejected. This indicates that the model demonstrates acceptable calibration and fits the data adequately.

The results include the evaluation of model fit, classification accuracy, and the significance of individual predictor variables. These analyses aim to determine the extent to which aesthetic appeal, type of terrarium, type of plant, maintenance, price, and purchasing platform influence the likelihood of purchasing terrarium products.

The findings are presented in a structured manner, beginning with the overall model performance, followed by classification results, and concluding with the interpretation of regression coefficients.

Classification Performance

The classification results of the logistic regression model are presented in Table 1. The model correctly classified 82.2% of all observations. Specifically, it correctly predicted 48.1%

of the cases where respondents did not make a purchase ($Y = 0$), and 93.8% of the cases where respondents made a purchase ($Y = 1$).

Table 1. Classification Tables showing observed vs. predicted purchase decisions

| | Observed | Predicted | | Percentage Correct |
|--------------------|----------|-----------|----|--------------------|
| | | Y 0 | 1 | |
| Step 1 Y | 0 | 13 | 14 | 48.1 |
| | 1 | 5 | 75 | 93.75 |
| Overall Percentage | | | | 82.2 |

The cut of value is .0,50

Source: Primary data analysis using SPSS (2025)

Logistic Regression Results

The detailed results of the binary logistic regression analysis are presented in Table 2.

Table 2. Binary Logistic Regression Results Variables in the Equation

| | B | S.E. | Wald | Df | Sig. | Exp(B) |
|-------------------------------|-------|-------|-------|----|------|--------|
| Step 1 ^a Aesthetic | .965 | .457 | 4.456 | 1 | .035 | 2.624 |
| Type of Terrarium | -.112 | .169 | .438 | 1 | .508 | .894 |
| Type of Plant | -.223 | .130 | 2.933 | 1 | .087 | .800 |
| Maintenance | -.183 | .491 | .140 | 1 | .709 | .832 |
| Price | -.139 | .450 | .096 | 1 | .757 | .870 |
| Purchasing Platform | .219 | .257 | .729 | 1 | .393 | 1.245 |
| Constant | -.799 | 1.826 | .191 | 1 | .662 | .450 |

a. Variable(s) entered on step 1: Aesthetic, Type of Terrarium, Type of Plant, Maintenance, Price, Purchasing Platform.

Source: Primary data analysis using SPSS (2025)

Interpretation of Results

Among all independent variables, only aesthetic appeal was found to have a statistically significant effect on purchase decisions ($p = 0.035 < 0.05$). The positive coefficient ($\beta = 0.965$) indicates that higher aesthetic value increases the likelihood of purchasing terrarium products.

The odds ratio ($\text{Exp}(B) = 2.624$) suggests that for every one-unit increase in aesthetic rating, the probability of purchase increases by approximately 2.6 times, holding other variables constant.

In contrast, other variables such as type of terrarium, type of plant, maintenance, price, and purchasing platform did not show statistically significant effects ($p > 0.05$). This indicates that these factors do not independently influence purchase decisions within this model.

The findings of this study indicate that aesthetic appeal is the only variable that significantly influences terrarium purchase decisions among members of the Celebes Plant

Lovers community. This result highlights the importance of visual attractiveness in shaping consumer behavior, particularly in niche hobby-based markets such as terrarium enthusiasts.

However, it is important to acknowledge the limitations of the model. The Nagelkerke R^2 value of 0.182 indicates that only 18.2% of the variance in purchase decisions is explained by the six independent variables included in this study. This relatively low explanatory power suggests that the majority of the variation (81.8%) is attributable to other factors not examined here. Such factors may include social influence from community members, personal lifestyle preferences, emotional attachment to plants, prior experience with terrariums, or trends within the hobbyist community (Kotler & Keller, 2016; Holbrook, 1999). Future research should incorporate these additional variables to achieve a more comprehensive understanding of terrarium purchase behavior.

The significant positive effect of aesthetic appeal suggests that consumers are more likely to purchase terrariums that are visually pleasing. This finding is consistent with consumer behavior theory, which emphasizes the role of visual stimuli and emotional responses in influencing purchasing decisions (Hirschman & Holbrook, 1982; Holbrook, 1999). In the context of terrariums, aesthetic value not only reflects beauty but also creativity, uniqueness, and perceived artistic expression.

The odds ratio result further strengthens this finding, indicating that an increase in aesthetic value substantially raises the likelihood of purchase. This implies that sellers and creators should prioritize design, composition, and visual harmony when developing terrarium products to attract potential buyers. Similar findings were reported by Bloch et al. (2003), who emphasized that product design significantly affects consumer response and purchase intention.

On the other hand, variables such as type of terrarium, type of plant, maintenance, price, and purchasing platform were not found to have a statistically significant effect on purchase decisions. This suggests that, within this community, consumers may not prioritize functional or technical aspects as much as visual appeal. One possible explanation is that members of the Celebes Plant Lovers community already possess sufficient knowledge about plants and terrarium care, reducing the importance of factors such as maintenance and plant type.

Interestingly, price was also not a significant factor, indicating that consumers in this segment may be less price-sensitive when the product meets their aesthetic expectations. This behavior is commonly observed in hobbyist communities, where emotional satisfaction and personal interest outweigh economic considerations (Holbrook & Hirschman, 1982).

Furthermore, the high classification accuracy of the model indicates that the regression model performs well in predicting purchase behavior. However, the relatively moderate Nagelkerke R^2 value suggests that there are other factors not included in this study that may also influence purchasing decisions, such as social influence, personal preferences, or lifestyle factors (Kotler & Keller, 2016).

Overall, this study demonstrates that aesthetic appeal plays a dominant role in influencing terrarium purchase decisions, while other factors have limited impact in this specific community context. These findings provide valuable insights for both researchers and practitioners in understanding consumer behavior in specialized markets.

Although the overall classification accuracy of the model is 82.1%, a closer examination of Table 1 reveals a notable imbalance in prediction performance. The model correctly

predicted only 48.1% of the cases where respondents did not make a purchase ($Y = 0$), while it correctly predicted 93.8% of purchasers ($Y = 1$). This indicates that the model has low sensitivity for the non-purchase category, meaning it is far better at identifying those who bought a terrarium than those who did not. This imbalance may be due to the disproportionate number of purchasers (75 purchasers vs. 13 non-purchasers in the correctly classified cells, or 80 total $Y = 1$ vs. 27 total $Y = 0$ based on the table). Future studies should aim for a more balanced sample or include additional predictor variables that specifically differentiate non-purchasers from purchasers.

CONCLUSION

This study aims to examine the factors influencing terrarium purchase decisions among members of the Celebes Plant Lovers community using a binary logistic regression approach. Based on the results, it can be concluded that aesthetic appeal is the only variable that has a statistically significant effect on purchase decisions. The findings show that higher aesthetic value significantly increases the likelihood of purchasing terrarium products. This indicates that visual attractiveness plays a crucial role in influencing consumer behavior within the community. In contrast, other variables such as type of terrarium, type of plant, maintenance, price, and purchasing platform do not have a significant independent effect on purchase decisions. Additionally, the model demonstrates a good level of predictive accuracy, correctly classifying 82.2% of cases. However, the relatively moderate explanatory power of the model suggests that there are other factors beyond those examined in this study that may influence purchasing behavior. Overall, this study highlights the dominance of aesthetic considerations over functional and economic factors in shaping purchase decisions within a hobby-based community.

Based on these findings, several suggestions are proposed. For terrarium producers and sellers, prioritizing visual design elements such as plant composition, container aesthetics, and overall harmony can enhance product appeal and increase purchase likelihood, as consumers in this community are less sensitive to price and maintenance factors. For future researchers, it is recommended to include additional variables such as social influence, personal lifestyle preferences, emotional attachment, or peer recommendations to improve the explanatory power of the model, given that the current Nagelkerke R^2 of 0.182 indicates substantial unexplained variance. Lastly, community managers and marketers can leverage aesthetic-centric promotional strategies, such as visual storytelling and user-generated content on social media, to strengthen engagement and drive purchasing behavior within similar hobbyist communities.

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