

Customer Preferences on the Packaging of Calamay Delicacies in Jagna, Bohol: A Comparative Study Between Coconut Shell and Plastic Containers

¹Jesszon B. Cano, ²John Victor C. Acilo

Bohol Island State University

¹jesszon.cano@bisu.edu.ph, ²johnvictor.acilo@bisu.edu.ph

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Corresponding Email:

jesszon.cano@bisu.edu.ph

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calamay delicacies, packaging preference, coconut shell packaging, cultural representation, consumer behavior

Abstract. Packaging plays a crucial role in shaping consumer perception and influencing purchasing behavior, especially for traditional food products. This study examined customer preferences regarding the packaging of calamay delicacies in Jagna, Bohol, with a comparison between coconut shell packaging and plastic containers. A descriptive-comparative research design was utilized, employing a structured survey questionnaire administered to 73 respondents who had prior experience purchasing calamay. The collected data were analyzed using frequency distribution, weighted mean, and an independent samples t-test. The findings indicated that a majority of respondents favored coconut shell packaging over plastic containers. This preference was largely attributed to its strong cultural significance, traditional aesthetic appeal, and environmentally sustainable nature. Coconut shell packaging was also rated higher in terms of purchase likelihood, suggesting that consumers are more inclined to buy products presented in traditional materials. Furthermore, it received more favorable evaluations across key aspects such as authenticity, practicality, and environmental impact. Statistical analysis revealed a significant difference between the two packaging types, confirming that the observed preference for coconut shell packaging was not due to chance. These results highlight the enduring value consumers place on traditional packaging, not only as a means of preserving cultural identity but also as a strategy aligned with sustainability goals. Overall, the study underscores the importance of integrating cultural heritage with modern marketing approaches. The insights generated can serve as a valuable reference for producers, entrepreneurs, and policymakers in developing packaging strategies that effectively balance tradition, consumer appeal, and environmental responsibility.

Introduction

Calamay is a well-known Filipino delicacy made of glutinous rice, coconut milk, and sugar, with Jagna, Bohol, being one of the most recognized producers of this sweet product. Traditionally, calamay delicacies are packaged in polished coconut shells (bagol), sealed with red paper, symbolizing authenticity, heritage, and craftsmanship (Tedoco & Panes, 2024). In recent years, however, producers have increasingly shifted to modern packaging such as plastic containers, which offer convenience, durability, and affordability, particularly appealing to tourists and consumers seeking practicality (Coelho et al., 2020).

Packaging plays a crucial role not only in preserving food quality but also in shaping consumer perception and purchase decisions (Bou-Mitri et al., 2021). For local delicacies such as calamay, packaging also serves as a cultural marker that communicates tradition and identity to both local and global markets (Tupas & Banas, 2021). Previous studies have emphasized that consumer preferences in food packaging are influenced by multiple factors, including convenience, environmental impact, price, and cultural value (Boz et al., 2020). However, little is known about how these factors apply to indigenous delicacies in the Philippine context, particularly calamay in Jagna, Bohol.

Understanding consumer preferences on calamay packaging is important for balancing tradition and modernization in local industries. On one hand, coconut shell packaging preserves cultural heritage and offers an eco-friendly alternative aligned with sustainability goals. On the other hand, plastic containers provide ease of transport, longer shelf life, and greater acceptance among mass-market consumers (Simboli et al., 2024). Producers face the challenge of addressing these diverse consumer expectations while maintaining competitiveness in the local and tourist markets.

Therefore, this study explored customer preferences regarding the packaging of calamay delicacies in Jagna, Bohol, specifically comparing coconut shell and plastic containers. It aimed to identify the dominant packaging preference, examine the factors influencing consumer choices, and assess the implications for product marketing and cultural preservation. Findings from this study provided valuable insights for calamay producers, local entrepreneurs, and policymakers in developing packaging strategies that aligned with consumer demands while sustaining the cultural significance of Bohol's delicacies.

Methodology

This section outlines the research methods employed to examine customer preferences regarding the packaging of calamay, a well-known delicacy in Jagna, Bohol. The methodology described the research design, respondents, and locale, instruments used, statistical treatment of data, and limitations of the study. By presenting these elements, the study ensured clarity, transparency, and replicability in achieving its objectives.

Design

This study employed a descriptive-comparative research design to analyze consumer preferences between coconut shell and plastic packaging of calamay delicacies in Jagna, Bohol, for the calendar year 2025. The design was chosen because it allowed the collection of both quantitative and qualitative data to describe consumer behavior and to compare differences in perceptions and preferences across packaging types.

Environment and Participants

The respondents of the study were the residents and visitors in Jagna, Bohol, who had purchased or consumed calamay delicacies within the year 2025. A purposive sampling technique was applied to ensure that only individuals with actual purchasing or consumption experience of calamay were included. The study was conducted in Jagna, Bohol, widely recognized as the center of calamay production in the Philippines. A total of 120 respondents were selected to represent different demographic categories, including age, sex, residency status, and purchasing frequency.

Instruments. The main research instrument was a structured survey questionnaire divided into two sections:

- *Section A – Demographic Profile.* Questions on age, sex, residency, and prior experience of buying calamay delicacies.
- *Section B – Consumer Preferences.* Items evaluating convenience, affordability, durability, cultural value, environmental impact, and overall acceptability of coconut shell and plastic packaging. A five-point Likert scale was used (1 = Strongly Disagree to 5 = Strongly Agree).

The instrument was validated by three experts in hospitality, business, and local product development, and pilot-tested with 15 respondents for reliability.

Statistical Treatment. The study utilized the following statistical treatments:

1. *Frequency and Percentage Distribution* – used to describe the demographic profile of respondents and identify preferred packaging types and valued packaging attributes.
2. *Weighted Mean* – used to measure the level of consumer preference, purchase likelihood, and attitudes toward authenticity, practicality, and environmental impact of the packaging types.
3. *Independent Samples t-test* – used to determine whether there is a significant difference between consumer attitudes toward coconut shell packaging and plastic container packaging.

4. *Descriptive Statistics* – including mean, median, mode, standard deviation, variance, skewness, kurtosis, range, minimum, and maximum, used to summarize and interpret consumer purchase likelihood and response patterns.

Limitations of the Study

This study was limited to exploring the customer preferences between plastic packaging and coconut shell packaging of calamay delicacies in Jagna, Bohol for the calendar year 2025. The scope of the research focused only on consumers who had purchased or consumed calamay within the said locality, which may not have fully captured the perspectives of consumers outside Jagna or the broader province of Bohol. The use of self-reported questionnaires was also subject to biases such as social desirability or recall limitations. Furthermore, the study did not include other factors that may have influenced consumer preference, such as pricing, branding, or marketing strategies, but was confined primarily to packaging aspects. These limitations were acknowledged to guide the interpretation of the findings within the specific context of this research.

Ethical Consideration

This study adhered to the ethical standards of research involving human participants. Before data collection, informed consent was obtained from all respondents, ensuring that their participation was voluntary and that they were fully aware of the purpose of the study. Participants were assured of the confidentiality and anonymity of their responses, and no identifying information was collected to protect their privacy. The data gathered was used solely for academic purposes and was stored securely to prevent unauthorized access. Respondents were also informed of their right to withdraw from the study at any point without penalty. Furthermore, the study complied with ethical guidelines prescribed by the institution and aligned with the principles of integrity, respect, and beneficence.

Results and Discussion

Profile the Respondents According to Demographic Characteristics

Table 1 presents the demographic profile of the respondents who participated in the study. In terms of age, the majority of respondents were within the 18–24 age group, comprising 49 participants or 67.12% of the total sample. This was followed by respondents aged 25–34 with 12 participants (16.44%), 35–44 with 6 participants (8.22%), and 45–54 with only 1 respondent (1.37%). The results indicate that the study was largely represented by young adults, suggesting that preferences and attitudes gathered in this research primarily reflect the perceptions of younger consumers.

	Indicators	Frequency	Percentage
1.1 Age			
	18–24	49	67.12
	25–34	12	16.44
	35–44	6	08.22
	45–54	1	01.37
1.2 Sex			
	Male	19	26.03
	Female	54	73.97
1.3 Residency Classification			
	Resident of Bohol (outside Jagna)	55	75.34
	Resident of Jagna	17	23.29
	Tourist/Visitor from other province	1	01.37
1.4 Previous Purchasing Experience			
	Yes	71	97.26
	No	2	02.74

Table 1. Profile of the Respondents

Regarding sex, most respondents were female, accounting for 54 participants or 73.97%, while 19 respondents or 26.03% were male. This suggests that female consumers formed the majority of the purchasing and preference evaluation for calamay packaging in this study. The higher representation of female respondents may imply stronger involvement or interest among women in purchasing delicacies and evaluating product packaging. In terms of residency classification, a large portion of the respondents were residents of Bohol but outside Jagna, totaling 55 participants or 75.34%. Meanwhile,

17 respondents (23.29%) were residents of Jagna, and only 1 respondent (1.37%) was identified as a tourist or visitor from another province.

These findings suggest that calamay delicacies in Jagna are widely consumed and recognized within the province, indicating its significance as a regional product rather than solely a tourist commodity. Lastly, the majority of respondents reported having previous purchasing experience with calamay delicacies, with 71 participants or 97.26% answering “Yes,” while only 2 respondents or 2.74% indicated they had no prior purchasing experience. This implies that most respondents were familiar with calamay products and their packaging, strengthening the reliability of their preferences and opinions regarding the packaging options examined in the study.

Consumer Preferences and Attitudes toward the Packaging of Calamay Delicacies

Preferred Packaging Type

Table 2.1 presents the respondents’ preferred packaging type for calamay delicacies in Jagna, Bohol. The results show that the majority of respondents preferred the traditional coconut shell packaging, with 56 respondents or 76.71% selecting this option. This indicates a strong consumer inclination toward the traditional presentation of calamay, which may be associated with cultural authenticity, aesthetic appeal, and product identity.

Indicators	Frequency	Percentage
Coconut Shell (Traditional)	56	76.71
Plastic Container (Modern)	13	17.80
No Preference	4	05.49

Table 2.1. Preferred Packaging Type

On the other hand, 13 respondents or 17.80% preferred the modern plastic container. This suggests that while some consumers value the convenience, durability, and practicality offered by plastic packaging, it is less favored compared to the traditional coconut shell. Meanwhile, 4 respondents or 5.49% indicated having no specific preference between the two packaging types. This implies that for a small portion of consumers, packaging type may not significantly influence their purchasing decision, and they may focus more on other factors such as taste, price, or product availability. Overall, the findings highlight the strong cultural and traditional significance of coconut shell packaging in shaping consumer preference for calamay delicacies in Jagna, Bohol.

Valued Packaging Attributes

Table 2.2 presents the valued packaging attributes that influence consumer preferences for calamay delicacies in Jagna, Bohol. The data reveal that the most valued attribute among respondents is traditional appearance and uniqueness, with 43 respondents or 58.90% selecting this factor. This indicates that consumers place high importance on packaging that reflects cultural identity and enhances the distinctiveness of the delicacy, reinforcing the product’s traditional value.

Indicators	Frequency	Percentage
Traditional Appearance and Uniqueness	43	58.90
Convenience and Ease of Transport	11	15.07
Shelf Life or Durability	3	04.11
Environmental Impact (Eco-friendly)	15	20.55
Price Affordability	1	01.37

Table 2.2 Valued Packaging Attributes

Environmental impact or eco-friendliness ranked as the second most valued attribute, with 15 respondents or 20.55%. This suggests that a considerable portion of consumers is becoming more conscious of sustainable packaging options and prefers materials that are environmentally responsible. Convenience and ease of transport were selected by 11 respondents or 15.07%, indicating that some consumers prioritize packaging that is easy to carry and handle, particularly for travel or gift-giving purposes. Meanwhile, shelf life or durability was considered important by 3 respondents or 4.11%, suggesting that only a small number of consumers focus on the product’s storage longevity when evaluating packaging. Lastly, price affordability was identified by only 1 respondent or 1.37%, indicating that packaging cost is the least influential factor among respondents when selecting calamay packaging. Overall, the findings suggest that cultural value and environmental considerations play a more significant role in shaping consumer packaging preferences than practicality or cost.

Purchase Likelihood by Packaging Type

Table 2.3 presents the purchase likelihood of consumers toward calamay products based on two different packaging types, namely coconut shell and plastic container, as evaluated by seventy-three (73) respondents. The table summarizes the descriptive statistical measures, including mean, median, mode, variability, and distribution characteristics, to determine which packaging type is more preferred by consumers in terms of their willingness to purchase. These statistical indicators provide a comparative overview of consumer perceptions and help identify which packaging option is more appealing in the market.

Coconut Shell		Plastic Container	
Mean	4.328767123	Mean	3.424657534
Standard Error	0.108705533	Standard Error	0.12629513
Median	5	Median	3
Mode	5	Mode	3
Standard Deviation	0.928780481	Standard Deviation	1.07906606
Sample Variance	0.862633181	Sample Variance	1.164383562
Kurtosis	0.537230979	Kurtosis	-0.275861694
Skewness	-1.2450222	Skewness	-0.24316035
Range	3	Range	4
Minimum	2	Minimum	1
Maximum	5	Maximum	5
Sum	316	Sum	250
Count	73	Count	73

Table 2.3 Purchase Likelihood by Packaging Type

The data shows that respondents demonstrate a higher likelihood of purchasing products packaged in coconut shells compared to plastic containers. This is evident from the mean score of 4.33 for coconut shell packaging, which is significantly higher than the 3.42 mean score for plastic containers. The higher mean indicates that, on average, respondents tend to prefer or are more willing to purchase products using coconut shell packaging. The median and mode values further support this preference. Coconut shell packaging has both a median and mode of 5, suggesting that most respondents gave the highest possible rating for purchase likelihood. In contrast, the plastic container received a median and mode of 3, indicating a more moderate level of purchasing interest.

In terms of response consistency, coconut shell packaging shows a slightly lower standard deviation (0.93) compared to plastic containers (1.08). This means that respondents' ratings for coconut shell packaging were more consistent, while opinions about plastic containers were more varied. The range also reflects this variation, with plastic containers having a wider range (4) than coconut shells (3), suggesting greater diversity in respondents' perceptions toward plastic packaging. The skewness values reveal that both packaging types are negatively skewed, meaning responses are generally concentrated toward higher ratings. However, coconut shell packaging has a stronger negative skew (-1.25), indicating that a large number of respondents strongly favored it. Plastic containers have only a slight negative skew (-0.24), showing a more balanced distribution of responses.

Meanwhile, the kurtosis values suggest that coconut shell packaging responses are slightly more peaked (0.54), implying that many responses cluster closely around high ratings. Plastic containers show a slightly flatter distribution (-0.28), indicating more spread-out responses. Overall, the findings suggest that respondents significantly favor coconut shell packaging over plastic containers in terms of purchase likelihood. Coconut shell packaging not only received higher ratings but also showed more consistent and strongly positive responses from consumers.

Cultural Representation of Packaging

The data in Table 2.4 shows that the majority of respondents strongly associate coconut shell packaging with cultural representation. Out of 73 respondents, 67 or 91.78% identified coconut shells as culturally representative, indicating that consumers widely perceive this type of packaging as reflective of local tradition, heritage, and authenticity.

Indicators	Frequency	Percentage
Coconut Shell	67	91.78
Plastic Container	1	01.37
Both	5	06.85

Table 2.4 Cultural Representation of Packaging

In contrast, only 1 respondent or 1.37% considered plastic containers as culturally representative, suggesting that plastic packaging is generally viewed as modern and lacking cultural significance. Meanwhile, 5 respondents or 6.85% believed that both packaging types can represent culture, implying that while traditional packaging is more strongly linked to cultural identity, some consumers recognize that modern packaging can still coexist with cultural elements. Overall, the findings highlight that coconut shell packaging is strongly valued for preserving and showcasing cultural identity compared to plastic containers.

Willingness To Pay for Packaging Options

The data presented in Figure 1 shows the frequency distribution of responses across different value ranges. The majority of observations are concentrated in the bin with an upper limit of 84.375, which recorded the highest frequency of 116, indicating that most of the responses fall within the lower to mid-range values. The next highest frequency is found in the 143.75 bin with 19 observations, followed by the 25 bin with 4 observations.

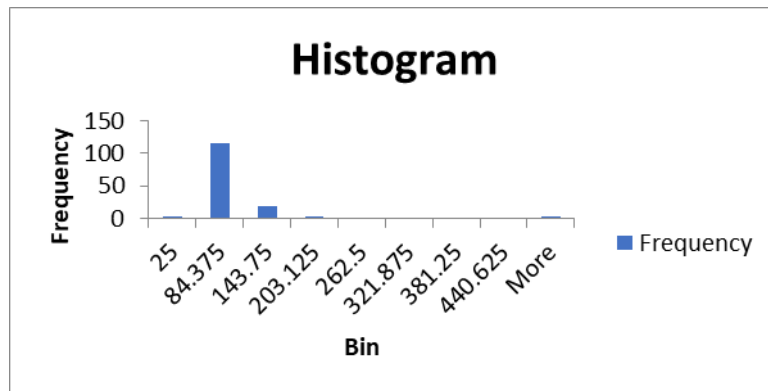


Figure 1. Willingness To Pay for Packaging Options

Only 3 responses were recorded in the 203.125 bin, and another 3 responses fall under the "More" category, suggesting very few observations exceed the highest specified range. The bins from 262.5 to 440.625 recorded zero frequency, indicating that no responses were observed within those intervals. Overall, the distribution demonstrates that the data is heavily concentrated in the lower range, with very limited occurrences in higher value categories, suggesting a positively skewed distribution where most observations are clustered toward the lower bins.

Attitudes Toward Authenticity, Practicality, and Environmental Impact

The data in Table 2.5 presents a comparison of respondents' attitudes toward authenticity, practicality, and environmental impact between coconut shell and plastic container packaging. The results show that coconut shell packaging obtained a higher mean score of 4.59 compared to 3.88 for plastic containers, indicating that respondents generally have more favorable attitudes toward coconut shell packaging in terms of these attributes. The variance values reveal that responses toward coconut shell packaging (0.72) were slightly more consistent than those for plastic containers (0.97), suggesting that respondents shared more similar positive perceptions toward coconut shells.

	Coconut Shell	Plastic Container
Mean	4.589041096	3.876712329
Variance	0.717656012	0.970700152
Observations	73	73
Pooled Variance	0.844178082	
Hypothesized Mean Difference	0	
df	144	
t Stat	4.683924431	
P(T<=t) one-tail	3.224E-06	
t Critical one-tail	1.655504177	
P(T<=t) two-tail	6.44801E-06	
t Critical two-tail	1.976575066	

Table 2.5 Attitudes Toward Authenticity, Practicality, and Environmental Impact

The t-test results further confirm that the difference between the two packaging types is statistically significant. The computed t-statistic (4.68) is greater than the critical t-value (1.98) for a two-tailed test, indicating a significant difference between the mean scores. Additionally, the p-value (6.45E-06) is much lower than the standard significance level of 0.05, which strongly supports rejecting the null hypothesis that there is no difference between the two packaging types. Overall, the findings indicate that respondents significantly prefer coconut shell packaging over plastic containers in terms of authenticity, practicality, and environmental impact, suggesting that traditional and eco-friendly packaging is more positively perceived by consumers.

Conclusion and Recommendations

This study examined customer preferences regarding the packaging of calamay delicacies in Jagna, Bohol, comparing traditional coconut shell packaging and modern plastic containers. The findings revealed that most respondents preferred coconut shell packaging due to its strong cultural representation, traditional appearance, and environmental sustainability. Coconut shell packaging also demonstrated a higher purchase likelihood and more favorable consumer attitudes toward authenticity, practicality, and environmental impact. Statistical analysis confirmed a significant difference between the two packaging types, showing that coconut shell packaging is more positively perceived by consumers. While plastic containers provide convenience and durability, they were less associated with cultural identity and consumer preference. Overall, the study highlights the importance of preserving traditional packaging while balancing modern consumer needs in promoting local delicacies such as calamay.

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Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

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Appendices

No appendices are attached to this study.