

Understanding Gen Z's Preferences for Chocolate Bar Packaging Design: A Conjoint Analysis in Davao City

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ABSTRACT

This study investigates the preferred chocolate bar packaging attributes of Generation Z (Gen Z) consumers in Davao City, Philippines – the declared "Chocolate Capital of the Philippines". Utilizing Conjoint Analysis via the PAPRIKA method, data were gathered from 364 valid Gen Z respondents aged 18–28. The research quantifies the relative importance weights of five key packaging attributes. Findings reveal that Imagery (29.4%) and Color (26.2%) are the most influential factors driving consumer preference, followed by Material Type (20.7%), Typography (13.3%), and Packaging Shape (10.4%). Strong consensus among respondents is indicated by a Kendall's W of 0.724. The optimal packaging combination integrates Icons/Symbols, Shades of White, Plastic Packaging, Minimalist Fonts, and a Square Shape. Conversely, Illustrations and Shades of Black yielded 0.00% utility scores. These results provide actionable insights for local chocolate brands to realign packaging strategies with youth aesthetics.

INTRODUCTION

Chocolate operates globally as a well-loved sweet confectionery made from processed cocoa beans, experiencing robust market growth driven by changing lifestyle preferences and economic expansions (Singh et al., 2024). The global chocolate market is projected to reach \$140.12 billion in revenue by 2025, while the Philippine chocolate confectionery market is expected to hit \$726.90 million by 2025, maintaining an annual growth rate of 8.89% through 2030 (Statista, 2025). Locally, chocolate consumption is heavily driven by Millennials and Generation Z (Gen Z), who account for approximately 28.31% of the population in Davao City (Philippine Statistics Authority, 2024). In modern fast-moving consumer goods (FMCG) retail spaces, where consumer attention spans have dropped to an average of 8 seconds down to a rapid 1.3 seconds for brief ads, product packaging serves as a critical first point-of-contact advertising tool (Roberto, 2023; Tubig, 2024).

Aesthetic packaging configurations exploit visual and tactile cues like color, shape, and imagery to trigger quick, instinctive emotional states within consumers that often bypass logical quality assessments (Muthusamy et al., 2024). While international packaging trends highlight an increasing consumer willingness to pay price premiums for sustainable packaging options (Buying Green Report, 2023), local purchasing parameters are regularly altered by economic challenges, convenience trends, and brand exposure. Exploring these behavioral choices is highly vital for Davao City, which was formally declared the "Chocolate Capital of the Philippines" under Republic Act No. 11547 in 2021 due to its dominant role in domestic cacao production (Quieta, 2021).

Despite the commercial success of prominent regional tree-to-bar artisanal brands like Malagos Chocolate and MS3 Agri-Ventures, a distinct literature gap persists (Lacorte, 2024; Samaniego, 2022). There is a lack of published, data-driven research analyzing how local Gen Z consumers evaluate and make trade-offs between visual and structural packaging features when buying chocolate products (Ramirez, 2025). Furthermore, past local consumer studies have depended heavily on basic descriptive surveys that fail to capture the multi-attribute, compensatory nature of real-world purchasing behavior (Al-Omari et al., 2022). This research addresses these combined population, knowledge, and methodological gaps by conducting a conjoint trade-off design using 1000minds software. By clarifying youth preferences, this study provides regional chocolate brands, designers, and marketers with actionable parameters to reduce market misalignment and optimize shelf impact. At the conclusion of this study, we aim to isolate the explicit relative importance weights of visual packaging attributes and establish the most and least preferred design combinations among young adult chocolate buyers in Davao City.

THEORETICAL REVIEW

Multi-Attribute Utility Theory (MAUT)

Multi-Attribute Utility Theory (MAUT) provides the primary framework for analyzing the cognitive judgments of consumers in this study. Developed by Fishburn in 1970, MAUT assumes that individuals break down multi-feature alternatives into distinct attributes, assign independent values or "part-worth

utilities" to individual levels, and select the final alternative that yields the highest cumulative additive value (Gabato et al., 2025; Keeney & Raiffa, 1993). In this research, a chocolate package is viewed as a bundle of five discrete, mutually exclusive attributes: color, imagery, material type, shape, and typography.

Consistent with MAUT principles, respondents evaluate profiles by trading off an advantage in one attribute (e.g., highly appealing imagery) against a disadvantage in another (e.g., less sustainable material). This process reveals the implicit utility functions of local Gen Z consumers, particularly within Davao's competitive market where packaging attributes are heavily linked to local pride and artisanal quality interpretations (Magnier et al., 2016; Villanueva, 2017).

The Stimulus-Organism-Response (SOR) Model

The Stimulus-Organism-Response (SOR) model serves as the supporting framework by detailing the behavioral pathways through which packaging designs affect selection (Mehrabian & Russell, 1974). The five packaging attributes operate as external environmental stimuli (S) that target the consumer's visual field. These visual configurations hit the consumer organism (O), triggering internal cognitive assessments and emotional reactions, such as perceptions of luxury, product safety, or local authenticity (Cheung et al., 2020; Jacoby, 2002).

These internal states ultimately culminate in the observable behavioral response (R), which is expressed through choice preferences, purchase intent, and brand loyalty within the conjoint task (Islam et al., 2021; Kumar & Kim, 2020). Advanced multi-attribute assessments across similar youth populations confirm that structural elements and visual formats actively modify internal taste expectations and value beliefs (Sumatra, 2024).

By blending these two models, this study moves past a basic cause-and-effect approach to show how cognitive evaluation and emotional processing work together to shape consumer decisions. Specifically, while the SOR model describes how packaging attributes act as environmental stimuli that trigger internal emotional and cognitive states within the consumer organism, MAUT provides the analytical structure to explain exactly how those internal states systematically weigh and calculate trade-offs between competing features. This dual-lens approach clarifies the internal processing of the consumer "organism" by mapping the psychological transition from experiencing design cues to establishing utility choices. Consequently, the visual and structural features of chocolate packaging are treated both as behavioral triggers and measurable sub-components of value that guide the consumer's final selection. This interconnected path directly structures the visual layout of the study's research variables; see Figure 1 for the conceptual framework.

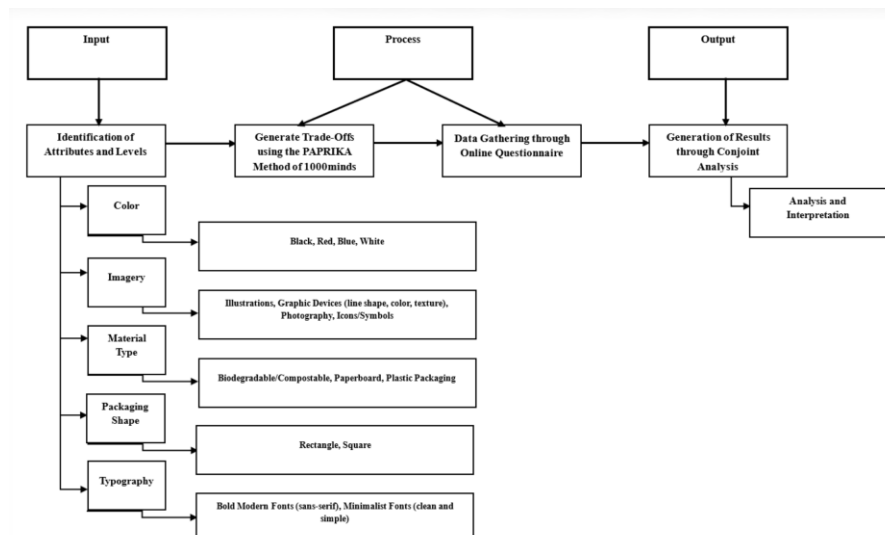


Figure 1. Conceptual Framework

METHODOLOGY

This study applied a quantitative descriptive research design utilizing Conjoint Analysis to examine and model consumer trade-offs without manipulating active market variables (Creswell & Creswell, 2018; Leedy & Ormrod, 2021). Individual preference behaviors were measured via the PAPRIKA (Potentially All Pairwise RanKings of all possible Alternatives) method within the 1000minds software platform (Al-Omari et al., 2022; Sumatra, 2024). Given an unknown local chocolate-consuming population size in Davao City, Cochran's sampling equation was used with a 90% confidence level and a 5% margin of error to define the baseline sample requirement of 271 respondents (Ahmed, 2024).

Following standard conjoint guidelines to ensure sufficient statistical power, the target sample was adjusted to 300, and a 20% safety buffer was added to offset unverified or straight-lined entries, finalizing the data target at 360 participants (Camino, 2017; Orme, 2010).

A non-probability purposive sampling framework was carried out across the three legislative districts of Davao City to ensure strict demographic alignment with Gen Z criteria, limiting respondents to individuals aged 18 to 28 (Dimock, 2019; Tongco, 2007). Field collection deployed a mall-intercept method within randomly selected commercial hubs determined via a roulette-style wheel process. The finalized collection sites were NCCC Main Chinatown (District 1), Gaisano Grand Citygate Mall (District 2), and Gmall of Toril (District 3). Data gathering spanned from August 25 to September 23, 2025, guided by a Poisson sampling matrix to maintain uniform daily generation rates across all field teams.

The development of the research instrument was split into qualitative and quantitative stages. Initial qualitative data from Structured Interview Forms (SIFs) and an In-Depth Interview (IDI) with MS3 Agri-Ventures isolated appropriate packaging configurations used in the regional chocolate market. Highly complex and technical parameters were eliminated to prevent survey fatigue, narrowing the conjoint design down to five essential attributes with refined levels: Color (Shades of Black, Red, Blue, White), Imagery (Illustrations,

Graphic Devices, Photography, Icons/Symbols), Typography (Bold Modern, Minimalist), Material Type (Biodegradable, Paperboard, Plastic), and Shape (Rectangle, Square). The 1000minds instrument generated randomized pairwise trade-off pairs. Quality control algorithms discarded entry sets with click-speeds under 1 second or total median response times below 2 seconds, yielding a finalized, robust sample of 364 valid respondents.

RESULTS

Demographic Profile of the Respondents

Descriptive tracking of the 364 valid consumer entries shows that the sample is heavily concentrated in younger age cohorts, led by 18-year-olds (22.80%), 21-year-olds (15.66%), and 22-year-olds (12.09%). The gender split was highly balanced, consisting of 50.82% male and 49.18% female respondents. Geographic residence was well-distributed across the city, with District 2 making up 38.74% of participants, followed by District 1 (31.32%) and District 3 (29.95%). In terms of consumption patterns, exactly 50.00% reported eating chocolate bars occasionally, while 33.79% consume them regularly on a weekly basis. Notably, 93.68% of the valid sample stated that they either often or sometimes evaluate packaging styles while shopping, proving the clear relevance of surface designs during point-of-sale actions.

Most and Least Favored Packaging Elements

The individual-level part-worth utility outputs computed through the PAPRIKA process identified the explicit relative importance weights across the core packaging attributes. Imagery emerged as the primary choice driver with an importance weight of 29.40%, closely followed by Color at 26.20%. Material Type captured the middle position with a weight of 20.70%, while Typography (13.30%) and Packaging Shape (10.40%) were isolated as the least influential attributes within the decision model.

The precise fractional utility scores for each individual design option are organized below in Table 1:

Table 1. Attribute Part-Worth Utility Scores

Attributes and Levels	Utility Score
IMAGERY	
* Icons/Symbols	29.40%
* Illustrations	0.00%
COLOR	
* Shades of White	26.20%
* Shades of Black	0.00%

MATERIAL TYPE	
* Plastic Packaging	20.70%
* Biodegradable/Compostable	0.00%
TYPOGRAPHY	
* Minimalist Fonts	13.30%
* Bold Modern Fonts	0.00%
PACKAGING SHAPE	
* Square	10.40%
* Rectangle	0.00%

The conjoint analysis generated a Kendall's Coefficient of Concordance (W) of 0.724, indicating strong, reliable agreement among the 364 raters regarding their packaging choices (Moslem et al., 2019). This is further reinforced by a mean Spearman rank correlation coefficient (ρ) of 0.723, confirming that the calculated importance structure is stable and uniform across demographic segments rather than a product of random error (Prion & Haerling, 2014).

Simulated Market Share of Preferred Configurations

The market simulation algorithm built into the software modeled choice shares across prospective packaging designs. Packaging 1, which grouped all maximum utility levels—Shades of White (26.2%), Icons/Symbols (29.4%), Plastic Packaging (20.7%), Square Shape (10.4%), and Minimalist Fonts (13.3%)—secured a baseline 100% first-choice preference probability.

However, when Packaging 1 is unavailable, the secondary simulation rankings uncover a distinct substitution cascade that demonstrates how consumers navigate trade-offs based on attribute weights, as shown in Table 2:

Table 2. Simulated Market Share Cascades

Alternative	Configuration Profile	Total Utility	1st Choice	2nd Choice	3rd Choice
Packaging 1	White, Icons, Plastic, Square, Minimalist	100.0%	100.0%	0.0%	0.0%

Packaging 6	White, Icons, Plastic, <i>Rectangle</i> , Minimalist	89.6%	0.0%	28.2%	11.7%
Packaging 3	<i>Blue</i> , Icons, Plastic, Square, Minimalist	89.9%	0.0%	20.5%	18.3%
Packaging 4	White, Icons, <i>Paperboard</i> , Square, Minimalist	89.6%	0.0%	22.9%	17.9%

When the top-ranked configuration is absent, 28.20% of respondents immediately default to Packaging 6. This profile preserves four high-utility features and differs only by shifting from a Square to a Rectangular shape. Because shape holds the lowest importance weight (10.40%), consumers accept this modification easily. Conversely, shifting to Packaging 3 introduces a color change to Shades of Blue, causing a more fractured preference distribution because color represents a far more critical attribute (26.20%) within the consumer utility hierarchy.

DISCUSSION

The empirical outcomes derived from this conjoint study confirm that visual elements—specifically imagery and color configurations—exercise dominant control over the packaging selections of Gen Z chocolate consumers in Davao City. This heavy reliance on instant surface layout parameters aligns with prior structural research highlighting that visual attributes generate stronger initial consumer ties and brand memories than technical text details (Ward et al., 2023). The high part-worth utility values recorded for icons/symbols (29.40%) and minimalist typefaces (13.30%) reinforce modern assertions that youth consumer groups favor visual simplicity, clean graphics, and high readability over cluttered layouts (Bicaku, 2024; Tilander, 2024).

The clear preference for a white aesthetic matches color psychology frameworks where white fields evoke purity, clean design, and premium simplicity (Nagy & Temesi, 2024). Conversely, heavy bold fonts and dark color choices feel outdated or overly busy to this segment.

Interestingly, the preference for plastic material configurations (20.70%) contrasts with international literature that emphasizes high youth demand for eco-friendly sustainable packaging (Packaging Strategies, 2023). This indicates that within Davao City's retail landscape, functional expectations regarding freshness preservation, affordability, and physical durability still overshadow environmental considerations during quick daily purchases (Walker & Fequet, 2023). Local chocolate manufacturers must navigate this reality carefully.

Firms can transition to high-barrier bioplastics or recyclable polymers that preserve the clean, bright visual identity consumers want, while systematically complying with green frameworks like the Ecological Solid Waste Management Act (RA 9003) and the Extended Producer Responsibility Act (RA 11898). Furthermore, these findings give local chocolatiers a data-backed blueprint for product changes. Rather than investing in complete structural re-engineering, brands can achieve strong youth engagement by modifying high-impact surface features like imagery and color fields while maintaining standard production materials.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, this conjoint research proves that chocolate packaging choices among Generation Z consumers in Davao City are heavily determined by visual simplicity and clean design cues, with imagery and color accounting for over half of total choice importance. Young consumers consistently prefer clean, modern, and practical layouts, with the optimal design configuration combining symbolic icons, white color fields, minimalist typography, square shapes, and practical, durable materials.

Based on these insights, the following strategic steps are recommended for key stakeholders:

1. **For Chocolate Companies in Davao City:** Update product packaging layouts incrementally. Redesign at least one flagship item within a 2-month window to feature minimalist icons, white color fields, and square forms, allowing for cost-effective market testing without overextending production capacity.
2. **For Marketing Professionals:** Develop visual brand campaigns that mimic the product's clean aesthetic. Launch targeted social media campaigns on youth platforms emphasizing visual simplicity, with an initial target of 1,000 active digital engagements.
3. **For Packaging Designers:** Standardize visual guidelines around minimalist principles. Prioritize icon-based imagery and light color tones over illustrations and heavy fonts, and conduct iterative consumer prototype tests prior to final manufacturing.
4. **For Aspiring Entrepreneurs:** Leverage visual aesthetics for market entry. Design chocolate bar concepts centered on white palettes and minimalist layouts to optimize shelf visibility and capture youth attention on a limited budget.
5. **For Retailers and Distributors:** Organize retail displays to optimize product visibility. Place chocolate bars that feature minimalist, light, and icon-heavy packaging designs at eye level to maximize impulse purchases among young shoppers.
6. **For Academic Institutions and the Academe:** Bridge classroom instruction with local market research. Incorporate quantitative conjoint analysis methods and visual marketing case studies into business curricula, and expand applied service-learning projects that assist local micro-enterprises with product branding.

FURTHER STUDY

While this study delivers clear insights for Davao City, its geographic concentration means the results may not fully represent youth preferences in rural regions or other urban areas of the Philippines. Future consumer research should expand this quantitative conjoint framework to a nationwide scale to compare cross-regional preferences. Additionally, future research models should integrate external market drivers – such as unit pricing, flavor types, and brand familiarity – alongside packaging design attributes to analyze how these variables interact during live purchase decisions. Finally, expanding sample parameters to include older generational cohorts like Millennials and Gen X will reveal how design preferences shift across different consumer lifecycles.

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