

A Study on the Influence of Modern Food Packaging Design on Impulse Purchases

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Abstract—Contemporary food packaging has evolved far beyond its conventional protective function to emerge as a powerful determinant of consumer purchasing behavior, especially in the context of unplanned or impulse buying. This study investigates the extent to which modern packaging design elements encompassing visual aesthetics, sustainability indicators, functional attributes, emotional triggers, and color psychology shape impulse purchase decisions among food consumers.

A descriptive research design was employed, with structured questionnaires administered to 100 respondents selected through stratified random sampling. Data were analyzed using percentage analysis, bar charts, and simple linear regression. The regression model examined the relationship between perceived packaging attractiveness and the emotional connection consumers develop with a product.

Key findings indicate that imagery is the most influential visual element in driving impulse purchases, cited by 52% of respondents. Emotional triggers such as indulgence, joy, and nostalgia were identified as primary motivators for unplanned buying. Convenience-driven functional features

particularly portability emerged as significant purchase influencers. Eco-friendly packaging generated moderate interest, with a majority of respondents adopting a neutral stance. The regression analysis confirmed a statistically significant moderate positive relationship ($R^2 = 0.177$, $F = 21.14$, p

< 0.05) between packaging attractiveness and emotional connection, indicating that while aesthetic appeal matters, other variables also contribute to consumer decision-making.

These findings offer actionable insights for food marketers and brand designers aiming to leverage packaging as a strategic tool for driving sales and building brand equity.

Index Terms—Food Packaging Design, Impulse Buying Behaviour, Consumer Psychology, Colour Psychology, Sustainable Packaging, Emotional Triggers, Visual Aesthetics, Brand Identity

I. INTRODUCTION

Background of the Study

The modern consumer marketplace is shaped by an intricate web of influences that guide purchasing decisions. Among these, the role of food packaging has undergone a transformative shift

transitioning from a purely utilitarian function focused on protection and preservation to becoming a sophisticated marketing instrument. In an era characterized by information overload and shrinking attention spans, packaging serves as a brand's most immediate ambassador, capable of communicating identity, quality, and value within seconds of consumer contact.

As the food industry grows increasingly competitive, brands are channeling significant resources into innovative packaging solutions that differentiate their products on crowded retail shelves. Creative use of materials, structural formats, color palettes, typography, and interactive digital features are now standard tools in the packaging designer's arsenal. The rise of e-commerce has further amplified the strategic importance of packaging, as it often constitutes the first tangible interaction a consumer has with a product. Understanding how these design choices affect consumer psychology particularly their tendency toward impulsive purchasing is therefore a critical concern for marketers, brand managers, and packaging engineers alike.

Problem Statement

Despite considerable scholarly attention to individual aspects of packaging design such as sustainability, aesthetics, and functionality, a comprehensive understanding of how these elements collectively influence impulse buying behavior in the food sector remains limited. Rapid changes in consumer values driven by environmental awareness, digital exposure, and lifestyle shifts have created a dynamic landscape in which traditional packaging models may no longer suffice. Specifically, there is an inadequate exploration of the interplay between visual design cues, eco-conscious features, emotional resonance, and functional convenience in triggering unplanned food purchases. This research addresses that gap.

Objectives of the Research

1. To examine the influence of visual design components in contemporary food packaging on consumer impulse purchase decisions.
2. To evaluate the role of sustainability-oriented packaging features in shaping unplanned buying behavior.
3. To assess the impact of functional and innovative packaging attributes on consumer preferences and impulsive purchases.
4. To investigate the emotional and psychological mechanisms through which modern packaging design drives impulse buying.
5. To analyze the effect of color psychology embedded in food packaging on spontaneous purchase decisions.

Research Questions

- To what degree do visual design elements in food packaging trigger impulse purchase behavior?
- How does the presence of sustainability indicators on food packaging affect the likelihood of unplanned purchases?
- What role do functional packaging features such as portability and reseal ability play in consumer impulse buying?
- In what ways do emotional and psychological cues embedded in packaging design influence spontaneous buying decisions?
- How does the use of specific color schemes on food packaging affect consumer purchase behavior?

Scope of the Study

This study focuses exclusively on packaged food products and examines consumer behavior within the context of retail purchasing environments, including both physical and online stores. The study is based on a sample of 100 consumers across diverse demographic segments and does not extend to non-food product categories. Findings are primarily relevant to the Indian consumer market but offer broader implications for packaging strategy in comparable consumer economies.

II. LITERATURE REVIEW

Overview of Existing Research

Scholarly inquiry into the relationship between packaging design and consumer behavior has grown substantially over the past two decades. Foundational contributions by Ampuero and Vila (2006) established that visual packaging elements including color, typography, and imagery are instrumental in forming immediate emotional impressions that influence purchase likelihood. Similarly, Silayoi and Speece (2007) demonstrated through conjoint analysis that structural packaging attributes such as size, shape, and material quality significantly affect consumer preference and perceived product value. These works collectively positioned packaging as a multi-dimensional construct with both aesthetic and functional dimensions.

Clement (2007) further developed this understanding through eye-tracking experiments, revealing that design differentiation on retail shelves creates cognitive salience the quality of being noticeable that drives impulsive product selection. His research highlighted that packaging does not merely communicate product features but actively shapes the perceptual context in which purchase decisions are made. More recently, Eze, Chinedu, and Bello (2020) examined the intersection of digital transformation and packaging, finding that interactive design elements such as augmented reality interfaces and scannable codes deepen consumer engagement and strengthen brand attachment.

Theories and Models Referenced

Several theoretical frameworks underpin this research. The Cue Utilization Theory, as applied to packaging by Steenis et al., distinguishes between intrinsic cues

(inherent product qualities) and extrinsic cues (external signals such as packaging design) in consumer quality assessment. This model helps explain how packaging functions as a surrogate indicator of product quality in the absence of direct experience. Kotler's five-stage consumer decision model encompassing need recognition, information search, alternative evaluation, purchase decision, and post-purchase behavior provides a broader framework within which the role of packaging at the point of sale can be situated.

Color psychology, as explored by Meyers-Levy and Peracchio (1995) and more recent researchers, offers insight into how specific hues trigger emotional responses and brand associations. Yu and Wu (2015) extended this to demonstrate how humanized visual elements on packaging improve brand recall. The theory of emotional branding, referenced by Schmitt (2012), further supports the notion that packaging capable of reflecting a consumer's cultural identity or personal values commands stronger brand loyalty.

Cultural and Emotional Dimensions of Packaging

Cultural resonance in packaging design has emerged as a significant area of inquiry. Cui et al. (2024) argue that packaging has evolved into a vehicle for cultural storytelling and brand identity formation, particularly in the food and beverage sector. Their research suggests that authentic cultural aesthetics when thoughtfully integrated without resorting to outdated stereotypes can foster consumer trust and emotional familiarity across diverse markets. Abdullah, Wahab, and Rashid (2019) reinforced this perspective, noting that culturally congruent packaging enhances emotional bonds and encourages brand loyalty, particularly in markets with strong heritage-based consumer preferences. Storytelling elements in packaging, including references to regional craftsmanship or historical provenance, have been shown to generate affective responses that enhance perceived brand value (Keller, 2013).

Functional Packaging and Modern Lifestyles

Kim, Lee, and Park (2013) contributed important findings on the practical dimension of packaging, demonstrating that convenience-oriented features such as portability, portion-controlled formats, and resealable closures align with the consumption patterns of urban, fast-paced demographics. Their

research indicated that functional packaging goes beyond aesthetics to directly address lifestyle compatibility, and that packaging perceived as convenient consistently shows a higher propensity to drive impulse purchases. Wu (2017) complemented this by finding that packaging designs that evoke emotional satisfaction alongside practical utility tend to engage consumers at a deeper psychological level, increasing their motivation to purchase.

Sustainability and Consumer Ethics in Packaging

Kumar, Sharma, and Singh (2021) documented the growing consumer demand for environmentally responsible packaging, noting that eco-friendly certifications and sustainable materials attract a specific segment of ethically motivated buyers. Their work indicates that sustainability in packaging is no longer merely an added feature but a defining characteristic for a growing consumer base. Packaging that visibly communicates environmental responsibility through biodegradable materials, recyclability labels, or minimalist eco-conscious design has been linked to both ethical purchasing decisions and, in some instances, spontaneous buying among environmentally conscious shoppers.

Gaps in Previous Studies

While prior research has examined individual packaging dimensions in isolation, a holistic investigation into how visual design, sustainability, functionality, and emotional cues simultaneously interact to drive impulse buying remains sparse. Most existing studies focus on general consumer behavior rather than the specific context of food impulse purchasing. Furthermore, the emerging role of digital design elements and the nuanced influence of color psychology on impulsive decisions in the food retail environment are underexplored. This study addresses these gaps by providing an integrated analysis across all five dimensions.

III. RESEARCH METHODOLOGY

Research Design

This study adopts a descriptive research design, which is well-suited to examining the characteristics, attitudes, and behaviors of a defined consumer population. The descriptive approach enables systematic data collection and analysis without

manipulation of variables, making it appropriate for understanding the current state of consumer responses to food packaging design.

Data Collection Method

Primary data were collected using a structured questionnaire containing both closed-ended and Likert-scale questions. The questionnaire was designed to capture respondents' perspectives across five thematic areas: visual design preferences, sustainability responsiveness, functional packaging preferences, emotional associations with packaging, and color psychology. The questionnaire was distributed digitally via Google Forms to ensure broad geographic and demographic reach.

Population and Sampling

Population: Consumers who regularly purchase packaged food products.

Sample Size: 100 respondents.

Sampling Technique: Stratified random sampling was employed to ensure proportional representation across demographic variables including age, gender, educational qualification, employment status, and

income bracket. This approach enhances the generalizability of the findings across different consumer segments.

Data Analysis Tools

Statistical Techniques: Percentage analysis, bar chart visualization, and simple linear regression.

Regression Variables: Independent Variable (X) Importance of Attractive Packaging (scale 1–5); Dependent Variable (Y) Emotional Connection with Packaging (scale 1–5).

Software: Microsoft Excel was used for data tabulation and regression computation.

Results and Data Analysis

Regression Analysis: Packaging Attractiveness and Emotional Connection

A simple linear regression was conducted to determine the extent to which perceived packaging attractiveness predicts the emotional connection consumers form with a product. The regression equation takes the form:

$$\text{Emotional Connection} = \beta_0 + \beta_1 \times (\text{Packaging Attractiveness}) + \varepsilon$$

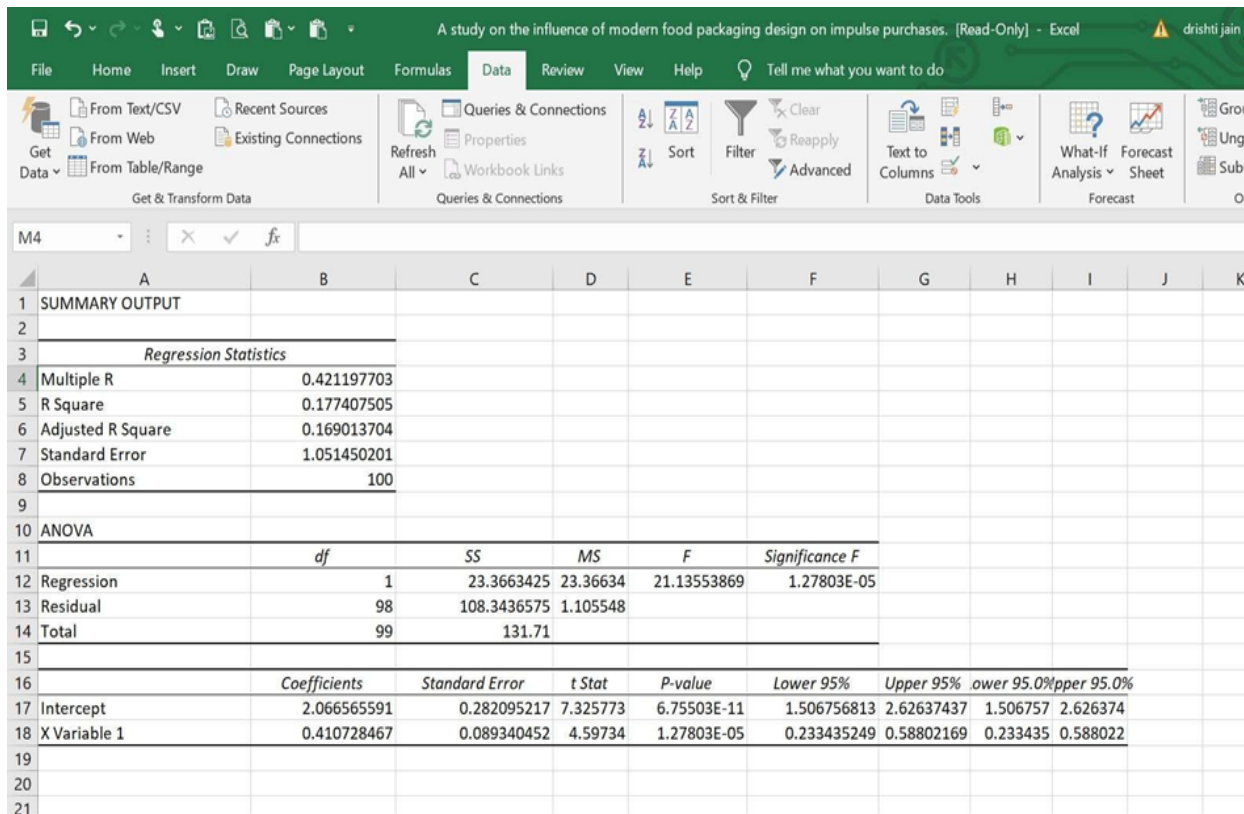


Figure 4.1: Regression Output Packaging Attractiveness vs. Emotional Connection with Packaging

Regression Statistics

Metric	Value	Interpretation
Multiple R	0.421	Moderate positive correlation between packaging attractiveness and emotional connection.
R Square (R ²)	0.177	17.7% of the variation in emotional connection is explained by packaging attractiveness.
Adjusted R Square	0.169	Adjusted coefficient accounting for sample size and number of predictors.
Standard Error	1.051	Average deviation of observed values from the predicted regression line.
Observations	100	Total respondents included in the regression model.

Table 4.1: Regression Statistics Summary

ANOVA Table

Source	df	SS	MS	F-Statistic	Significance F
Regression	1	23.37	23.37	21.14	1.278×10^{-5}
Residual	98	108.34	1.105	—	—
Total	99	131.71	—	—	—

Table 4.2: ANOVA Table

The F-statistic of 21.14 and Significance F of 1.278×10^{-5} confirm that the regression model is statistically significant. This implies that packaging attractiveness

is a meaningful predictor of emotional connection at the $p < 0.05$ threshold.

Regression Coefficients

Predictor	Coefficient	Std. Error	t-Statistic	P-Value	95% CI
Intercept (β_0)	2.067	0.282	7.33	6.76×10^{-11}	(1.51, 2.63)
Packaging Attractiveness (β_1)	0.411	0.089	4.60	1.28×10^{-5}	(0.233, 0.588)

Table 4.3: Regression Coefficients

The derived regression equation is: Emotional Connection = $2.067 + 0.411 \times$ (Packaging Attractiveness). For every one-unit increase in the importance a consumer places on attractive packaging, their emotional connection score rises by approximately 0.411 points. The low p-value (1.28×10^{-5}) confirms this relationship is statistically robust.

The majority of respondents (45%) fell within the 21–30 age bracket, followed by the under-20 group (22%), indicating that the sample is predominantly composed of young adult consumers a demographic known for high engagement with food retail environments and susceptibility to packaging-driven impulse purchases.

Demographic Profile of Respondents

Table 1: Age Distribution of Respondents

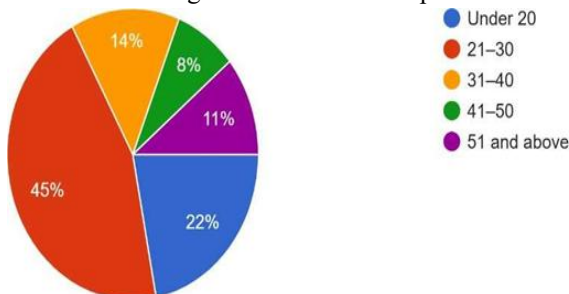


Figure 1: Age Distribution of Respondents

Table 2: Gender Distribution

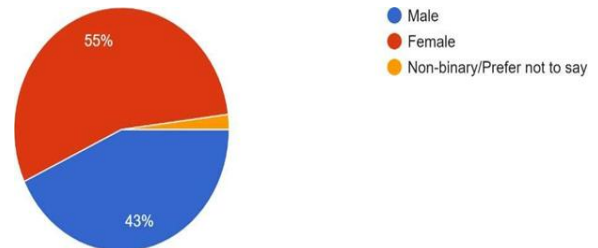


Figure 2: Gender Distribution of Respondents

Female respondents constituted 55% of the sample while males accounted for 43%, providing a reasonably balanced gender representation with a slight female majority.

Table 3: Educational Qualification

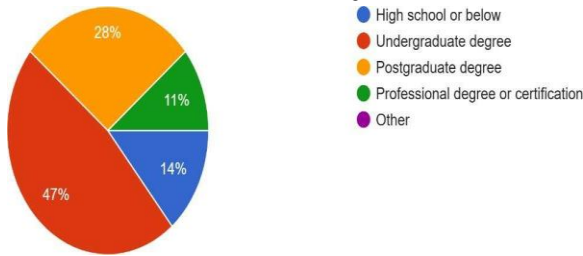


Figure 3: Level of Education

Undergraduate degree holders formed the largest group (47%), followed by postgraduate respondents (28%), suggesting a well-educated sample likely to be discerning in their consumer choices.

Table 4: Employment Status

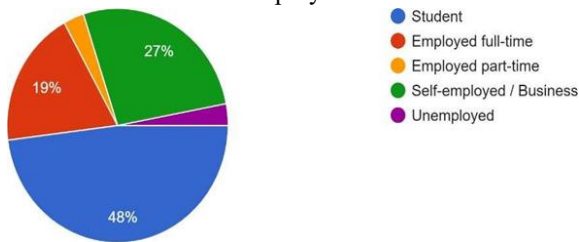


Figure 4: Employment Status

Students constituted the largest segment (48%), followed by business owners (27%) and full-time employees (19%). The dominance of students aligns with the younger age distribution noted above.

Visual Design and Packaging Attention

Table 5 : Frequency of Purchasing Packaged Food Products

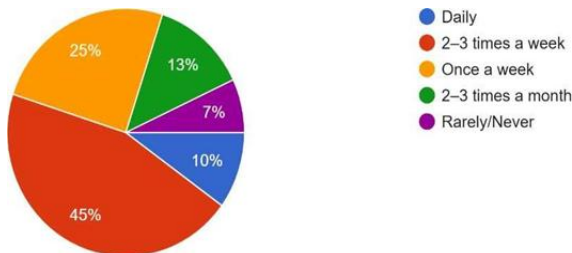


Figure 5: Frequency of Purchasing Packaged Food Products

The purchasing frequency data reveals that 45% of respondents buy packaged food products two to three times a week, indicating a high level of regular engagement with packaged food retail a context in which packaging cues are encountered repeatedly and cumulatively.

Table 6: Packaging Attention and Purchase Likelihood

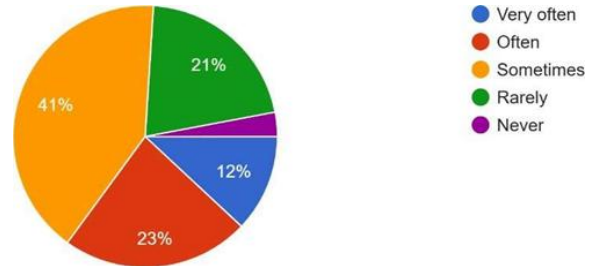


Figure 6: Packaging Catching Attention Leading to Purchase of Food Items

A combined 64% of respondents (41% "sometimes," 23% "often") acknowledged that visually engaging packaging has influenced their decision to purchase a food item, corroborating the central premise that packaging design functions as an active behavioral trigger.

Table 7: Most Influential Visual Design Element

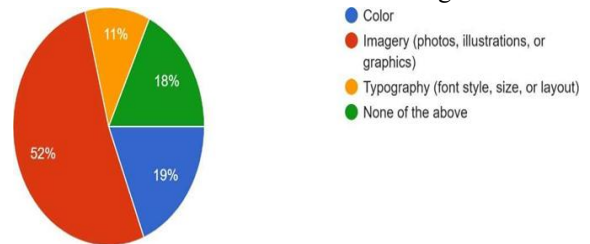


Figure 7: Most Influential Visual Design Element for Impulse Purchases

Imagery emerged as the dominant visual design cue, cited by 52% of respondents as the element most likely to prompt an impulse purchase. Color followed at 19% and typography at 11%, while 18% reported being unaffected by visual design elements.

Table 8 : Importance of Attractive Packaging in Unplanned Purchases (Scale 1-5)

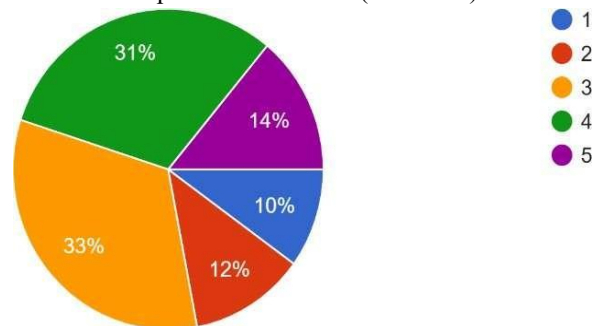


Figure 8: Importance of Attractive Packaging in Impulse Purchase Decisions

Sixty-four percent of respondents rated packaging attractiveness at 4 or 5 on a five-point importance scale, reflecting strong consensus that aesthetic appeal is a meaningful driver of unplanned food purchases.

Table 9 : Visual Appeal Compared to Competitor Products

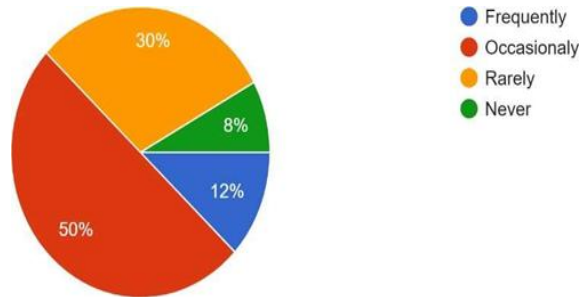


Figure 4.12: Choosing a Product Based on Visual Appeal Over Competitor Products

Half of all respondents (50%) reported having selected a product solely on the basis of its superior visual presentation relative to competing products, providing direct evidence of packaging's role as a competitive differentiator in consumer decision-making.

IV. DISCUSSION

Interpretation of Results

The findings of this study present a nuanced and multi-layered picture of how packaging design elements shape impulse buying behavior in the food retail context. Across all five thematic dimensions examined visual aesthetics, sustainability, functional features, emotional cues, and color psychology packaging consistently emerges as a meaningful but context-dependent driver of consumer decisions.

The dominance of imagery as the most influential visual element (52%) aligns with research in visual cognition that positions pictorial cues as the most rapidly processed and emotionally evocative component of any design system. The strong preference for packaging attractiveness (64% rating it above average or most important) reinforces the established argument by Ampuero and Vila (2006) that aesthetic coherence between packaging design and consumer expectations is critical to impulse purchase activation.

The regression analysis yields particularly instructive results. While the model confirms a statistically

significant positive relationship between packaging attractiveness and emotional connection ($R^2 = 0.177$, $p < 0.05$), the modest explanatory power of this model indicates that approximately 82% of the variance in emotional connection is attributable to factors outside the scope of packaging attractiveness alone. This finding is consistent with Kotler's multi-stage decision model, which positions packaging as one influence among many alongside price, brand reputation, peer influence, and prior experience.

Comparison with Prior Research

The moderate role of sustainability in impulse buying (42% neutral stance) partially contradicts the more optimistic projections of Kumar et al. (2021), who emphasized the growing decisiveness of eco-friendly packaging among consumer segments. The present data suggest that while environmental awareness is growing, it does not yet consistently override aesthetics or functional convenience as a primary impulse trigger particularly among younger, urban demographics.

The emotional trigger analysis, which identifies indulgence and craving (44%) as the predominant affective motivators, extends the foundational work of Van der Laan et al. (2012) on visual food cues and neural reward responses. The high salience of joy, nostalgia, and comfort as secondary triggers is consistent with the emotional branding literature (Schmitt, 2012) and substantiates the commercial value of packaging that communicates experiential rather than purely functional benefit.

The color preference findings notably the strong showing of subtle and pastel palettes (39%) alongside bright and bold schemes (31%) add nuance to color psychology models that have traditionally emphasized high-contrast designs as the primary tool for shelf visibility. These results suggest a more sophisticated consumer palette, possibly reflecting trends toward artisanal and wellness-oriented branding in the food market.

Implications for Practice

For food brand managers and packaging designers, these findings collectively suggest a strategic imperative to develop packaging that operates on multiple dimensions simultaneously: visually distinctive, emotionally resonant, functionally convenient, and progressively sustainable. A singular

focus on any one dimension is unlikely to maximize impulse purchase rates. Brands targeting younger urban demographics may benefit from combining bold imagery with pastel or calming color schemes and sustainability messaging, while brands serving broader markets should prioritize portability and single-serve formats.

V. CONCLUSION

This research set out to examine the multidimensional influence of modern food packaging design on consumer impulse purchasing behavior. Across five primary dimensions visual aesthetics, sustainability, functional innovation, emotional psychology, and color the study has demonstrated that packaging design is a genuinely significant determinant of unplanned purchases, though its effectiveness varies by consumer segment and contextual factors.

All five research objectives were addressed. Visual design elements, particularly imagery, emerged as the most potent single driver of impulse purchases. Sustainability packaging showed moderate influence, primarily among environmentally conscious buyers. Functional features such as portability and innovative design formats were broadly effective across demographic groups. Emotional and psychological appeals especially those evoking indulgence, joy, and nostalgia demonstrated strong and consistent influence on impulsive behavior. Color psychology revealed that both vibrant and soothing palettes can trigger purchases, depending on brand positioning and consumer profile.

The regression analysis confirmed that packaging attractiveness positively predicts emotional connection with a product at a statistically significant level, while also highlighting that packaging operates within a broader ecosystem of consumer influences. The overall conclusion is clear: packaging design is not merely a protective shell or an aesthetic exercise it is a critical strategic asset with measurable impact on consumer behavior and commercial outcomes.

Limitations

- The study is based on a sample of 100 respondents, which, while sufficient for a descriptive study, limits the statistical power and generalizability of regression findings to the

broader population.

- The sample is predominantly composed of young adults and students, which may introduce age-related bias in perceptions of packaging aesthetics and sustainability.
- Data were collected through a self-reported questionnaire, which is susceptible to response bias, social desirability effects, and recall inaccuracies.
- The study focuses exclusively on food packaging and does not extend findings to other consumer product categories where packaging dynamics may differ.
- The regression model accounts for only 17.7% of the variance in emotional connection, suggesting that important predictors beyond packaging attractiveness such as brand loyalty, pricing, and peer influence were not captured in the model.
- The cross-sectional design of the study captures consumer perceptions at a single point in time and is therefore unable to account for longitudinal shifts in consumer attitudes toward packaging.

Future Scope and Recommendations

Recommendations for Industry

- Food brands should invest in research-backed packaging design that integrates consumer psychology insights particularly around imagery selection, emotional storytelling, and color palette decisions into the packaging brief.
- As the demand for eco-friendly packaging grows, brands should make sustainability features visible and prominently communicated on the packaging rather than relegated to fine print, in order to leverage this as a purchasing trigger.
- Portability and single-serve formats should be prioritized for product lines targeting urban, time-poor demographics who make frequent, on-the-go food purchases.
- Digital integration through QR codes linking to immersive brand experiences or augmented reality interactions represents an underutilized opportunity to extend packaging engagement beyond the physical shelf.

Directions for Future Research

- Longitudinal studies tracking changes in

consumer packaging preferences over time would provide deeper insight into evolving trends, particularly around sustainability and digital packaging.

- Experimental designs using real-world shelf simulations or eye-tracking technology could provide more objective behavioral data to complement the self-reported findings of survey-based studies.
- Future research should explore cross-cultural variations in packaging preferences, particularly in markets where cultural symbolism and heritage-based design are dominant consumer motivators.
- Investigating the combined impact of online and offline packaging encounters on impulse buying especially as e-commerce transforms the first point of product contact represents a particularly timely and commercially relevant research direction.
- A multi-variable regression model incorporating price, brand equity, prior purchase experience, and peer influence alongside packaging attractiveness would offer a more comprehensive predictive framework for impulse buying behavior.

REFERENCES

- [1] Abdullah, M., Wahab, F., & Rashid, K. (2019). Typography and its influence on consumer engagement in packaging. *Journal of Design Studies*, 12(5), 415–432.
- [2] Ahmad, A. M. K., & Ahmad, Q. M. K. (2015). Factors influencing packaging design in impulse consumer purchasing behavior: A case study of Doritos Pack. *International Journal of Marketing Studies*, 7(6), 92. <https://doi.org/10.5539/ijms.v7n6p92>
- [3] Al-Samarraie, H., Eldenfria, A., Doodoo, J. E., Alzahrani, A. I., & Alalwan, N. (2019). Packaging design elements and consumers' decision to buy from the web: A cause-and-effect decision-making model. *Color Research & Application*, 44(6), 993–1005. <https://doi.org/10.1002/col.22427>
- [4] Ampuero, O., & Vila, N. (2006). Consumer perceptions of product packaging. *Journal of Consumer Marketing*, 23(2), 100–112.
- [5] Clement, J. (2007). Visual influence on in-store buying decisions: An eye-track experiment on the visual influence of packaging design. *Journal of Marketing Management*, 23(9–10), 917–928.
- [6] Cui, J., Gan, Z., Ning, Z., Xu, Z., Zhou, L., Zheng, P., & Peng, D. (2024). Exploring cultural elements in modern packaging design and their emotional impact on consumers. <https://doi.org/10.13140/RG.2.2.15596.58241>
- [7] Eze, E., Chinedu, O., & Bello, T. (2020). Digital transformation in packaging: Engaging consumers through interactive designs. *Journal of Digital Marketing*, 14(2), 134–145.
- [8] Kim, S., Lee, K., & Park, J. (2013). Functional food packaging: Innovations and consumer response. *Packaging Technology and Science*, 26(1), 45–57.
- [9] Komal, S. (2018). Branding through packaging: Insights into consumer decision-making. *Asian Journal of Marketing*, 22(6), 330–341.
- [10] Kumar, R., Sharma, A., & Singh, T. (2021). Sustainability in modern packaging design: Trends and consumer response. *Sustainable Marketing Journal*, 15(4), 298–314.
- [11] Meyers-Levy, J., & Peracchio, L. A. (1995). Understanding the effects of color: How the correspondence between available and required resources affects attitudes. *Journal of Consumer Research*, 22(2), 121–138.
- [12] Oaya, C. Z. T., Newman, O., & Ezie, O. (2017). Impact of packaging on consumer buying behavior in Nasarawa State. *International Journal of Sciences: Basic and Applied Research*. <https://core.ac.uk/download/pdf/249336062.pdf>
- [13] Salem, S. E. (2022). The effect of visual and verbal elements of food product packaging on consumer buying decision. *Zenodo*. <https://doi.org/10.5281/zenodo.7372699>
- [14] Schmitt, B. (2012). The consumer psychology of brands. *Journal of Consumer Psychology*, 22(1), 7–17.
- [15] Silayoi, P., & Speece, M. (2007). The importance of packaging attributes: A conjoint analysis approach. *European Journal of Marketing*, 41(11/12), 1495–1517.
- [16] Van der Laan, N. E., De Ridder, D. T., Viergever, M. A., & Smeets, P. A. (2012). The first taste is with the eyes: A meta-analysis on the neural correlates of processing visual food cues.

NeuroImage, 55(1), 296–303.

- [17] Wu, D. (2017). Research on influence of interesting food packaging design on consumer psychology. <https://doi.org/10.2991/hsmet-17.2017.103>
- [18] Yu, J., & Wu, D. (2015). Humanized packaging design and brand communication. *Packaging Engineering*, 36(18), 5–8.
- [19] Zahid, M., Khan, A., & Asim, R. (2022). The role of culture in consumer preference for food packaging. *International Journal of Consumer Studies*, 46(3), 589–602.