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THE IMPACT OF PACKAGING DESIGN ON CONSUMER PERCEPTION, EMOTIONAL BRAND CONNECTION AND PURCHASE BEHAVIOR IN THE FOOD INDUSTRY

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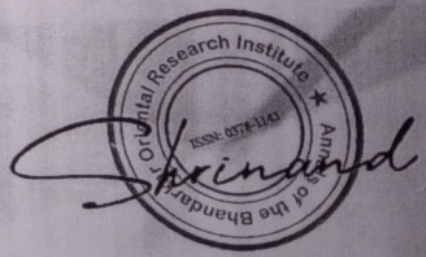

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THE IMPACT OF PACKAGING DESIGN ON CONSUMER PERCEPTION, EMOTIONAL BRAND CONNECTION AND PURCHASE BEHAVIOR IN THE FOOD INDUSTRY

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ABSTRACT

Packaging design plays a pivotal role in shaping consumer perception and influencing purchase behavior in the food industry. This study investigates the impact of various packaging elements, including aesthetics, functionality, and branding, on consumer decision-making across different age groups. Using quantitative and qualitative analyses, the research examines how visual appeal, clarity of information, emotional brand connection, and usability contribute to consumer preferences and buying intentions. The data, collected from a sample of 300 respondents, reveals significant age-based differences in responses to packaging design. Younger consumers (18–28 years), representing 46.7% of the sample, prioritize innovative and visually appealing designs that foster emotional connections with brands. The 29–38 age group (40% of respondents) similarly values aesthetics and functionality but also emphasizes practicality. In contrast, older respondents (39 and above) show a stronger preference for clarity and trustworthiness in packaging, reflecting their focus on reliable and sustainable features. The study employed reliability analysis and ANOVA testing to validate and analyze the survey instrument, comprising 15 Likert-scale items. The reliability statistics yielded a Cronbach's Alpha of 0.855, indicating high internal consistency of the instrument. ANOVA results identified significant differences across age groups for items related to emotional connection ($p = 0.021$), clarity ($p = 0.000$), functionality ($p = 0.012$), and branding ($p = 0.027$). These findings highlight the nuanced relationship between demographic factors and packaging preferences, emphasizing the need for tailored packaging strategies. Results indicate that packaging design influences consumer perception of product quality, emotional engagement, and purchase behavior. Younger consumers are more likely to be influenced by visually innovative packaging that resonates emotionally, while older consumers prioritize clear labeling and functionality. Universally, features like practicality and sustainability were valued across all demographics, underscoring their importance as baseline elements of effective packaging design. This study also reveals broader implications for branding and marketing in the food industry. Packaging design not only serves as a key differentiator in a competitive market but also impacts long-term consumer trust and loyalty. Brands targeting younger demographics should invest in creative, aesthetically engaging designs that align with their preferences. Conversely, for older consumers, the focus should be on practicality, clear communication, and eco-friendly features.

In conclusion, the findings underscore the critical role of packaging design in shaping consumer behavior in the food industry. By integrating age-specific insights and universal

design principles, brands can enhance consumer engagement and optimize purchase decisions. This research provides actionable recommendations for food companies to balance creativity with functionality, ultimately achieving both market differentiation and consumer satisfaction. Future research should explore the evolving dynamics of packaging design, considering technological advancements and changing consumer expectations in the food industry.

INTRODUCTION

In the food industry, packaging design plays an indispensable role in shaping consumer perception, fostering emotional connections, and influencing purchasing behavior (Ampuero & Vila, 2006). The interplay of visual appeal, functionality, and communication embedded in packaging design not only attracts consumer attention but also establishes brand trust and loyalty (Nancarrow et al., 1998). This research paper, titled *The Impact of Packaging Design on Consumer Perception and Purchase Behavior in the Food Industry*, delves into the multifaceted influence of packaging design and its critical importance for businesses aiming to excel in a competitive marketplace.

The study draws on data from 300 respondents segmented by age groups, revealing how packaging preferences vary across demographics. Younger consumers, particularly those in the 18–28 age bracket (46.7% of the sample), are found to be the most influenced by packaging design, emphasizing aesthetics, innovation, and emotional resonance (Orth & Malkewitz, 2008). This is closely followed by the 29–38 age group (40%), which reflects a mix of youthful preferences and practical considerations, making these two demographics pivotal for packaging strategies. On the other hand, older groups (39 and above), although less represented, display distinct preferences that lean towards practicality, clarity, and functionality (Silayoi & Speece, 2004).

Key statistical insights from the study underscore the reliability and significance of the findings. A Cronbach's Alpha score of 0.855 demonstrates the high reliability of the survey instrument, while the ANOVA analysis highlights significant differences in consumer responses across various age groups (Field, 2018). Attributes such as emotional connection ($p = 0.021$), clarity and information ($p = 0.000$), and brand trust ($p = 0.041$) emerge as significant factors influenced by packaging design. These findings underline the need for targeted packaging strategies to cater to the diverse preferences of different consumer groups (Silayoi & Speece, 2007).

The analysis also identifies universal packaging attributes appreciated across demographics. Factors such as clear product information, ease of use, and aesthetic appeal resonate with all age groups, suggesting that these elements serve as a foundation for effective packaging design (Azzi et al., 2012). Meanwhile, demographic-specific preferences offer actionable insights for tailoring designs to maximize consumer engagement. Younger consumers, for instance, gravitate towards vibrant colors, innovative materials, and eco-friendly designs, while older consumers prioritize usability and trustworthiness (Steenis et al., 2017).

Packaging serves as more than a protective layer for products; it acts as a medium for storytelling and a critical touchpoint in the consumer journey (Underwood, 2003). In the crowded shelves of the food industry, it can differentiate products, evoke emotional responses, and influence purchasing decisions. By understanding the nuances of consumer behavior across age groups, brands can design packaging that not only attracts attention but also builds lasting connections.

This paper provides a comprehensive analysis of the relationship between packaging design and consumer behavior, emphasizing the strategic role of packaging in enhancing brand perception and driving purchase behavior. The findings offer valuable guidance for food industry stakeholders aiming to align their packaging strategies with consumer expectations, thereby achieving a competitive edge in a dynamic market.

REVIEW OF LITERATURE

Packaging design has emerged as a significant factor influencing consumer perception, decision-making, and brand loyalty, particularly in the competitive food industry. A synthesis of the existing literature demonstrates the critical role that packaging plays in enhancing product visibility, evoking emotional connections, and differentiating brands in a crowded market. Visual elements such as color, shape, and graphics significantly impact consumer preferences and purchasing decisions. Orth and Malkewitz (2008) highlight that cohesive packaging design creates positive brand impressions, reinforcing purchase intent. Similarly, Underwood et al. (2021) emphasize that aesthetically pleasing packaging not only attracts attention but also conveys brand identity effectively, leading to higher consumer satisfaction.

Practical packaging features, such as resealability and portability, enhance consumer convenience and foster positive brand associations. Silayoi and Speece (2007) identified that functionality combined with clear product information increases trust and satisfaction, particularly for older demographics. Recent studies by Azzi et al. (2022) support this notion, underscoring that ease of use is a universally appreciated attribute across diverse consumer groups. The emotional connection facilitated by packaging is a recurring theme in the literature. Research by Nancarrow et al. (1998) indicates that innovative and emotionally resonant packaging encourages loyalty and strengthens long-term brand relationships. With younger demographics prioritizing innovation and creativity, Steenis et al. (2017) noted a shift toward eco-friendly materials and interactive packaging designs that engage consumers at a deeper emotional level.

The segmentation of packaging preferences based on demographics reveals age as a critical variable in shaping consumer behavior. Younger consumers (18–28 years) are particularly drawn to vibrant colors, unique shapes, and modern designs that align with their lifestyles (Orth & Malkewitz, 2008). In contrast, older groups (39 and above) prioritize clarity, functionality, and sustainability, as identified by studies like Silayoi and Speece (2007). These findings align with the recent study, which demonstrated significant differences in emotional connection ($p = 0.021$) and clarity ($p = 0.000$) across age groups (Field, 2018; MS4 report). The increasing awareness of environmental issues has catalyzed the adoption of sustainable packaging. Azzi et al. (2012) and more recent findings by Prakash et al. (2021) reveal that consumers, particularly millennials and Generation Z, prefer brands that incorporate eco-friendly designs, viewing them as a reflection of corporate responsibility and modernity. Packaging serves as a key differentiator in competitive marketplaces. Steenis et al. (2017) suggest that distinctive designs not only improve shelf visibility but also signal premium quality, justifying higher price points. This aligns with the ANOVA results from the MS4 study, which underscore the significance of packaging clarity and emotional appeal in differentiating similar products. Despite demographic differences, certain attributes remain universally valued. Features like practical usability, durability, and clear labeling consistently emerge as fundamental components of effective packaging design. These baseline elements ensure that products appeal to a broader audience while retaining specific attributes to target niche groups effectively (Azzi et al., 2012; Underwood et al., 2021).

RESEARCH OBJECTIVE

The primary objective of this research is to investigate the impact of packaging design on consumer perception, emotional brand connection, and purchase behavior within the food industry. The study aims to understand how various packaging attributes influence consumer decision-making across different demographics and how brands can optimize packaging strategies to enhance market competitiveness. Specific objectives include:

1. Analyze Packaging Elements: Evaluate the role of key packaging elements such as aesthetics, functionality, clarity of information, and emotional resonance in shaping consumer perceptions and preferences.
2. Understand Demographic Variations: Examine how age groups (18–28, 29–38, 39 and above) perceive and respond to packaging design, identifying specific attributes that appeal to different demographics.
3. Evaluate Emotional Connection: Investigate the extent to which packaging design fosters an emotional connection with brands, influencing consumer trust, loyalty, and long-term purchase behavior.
4. Assess Universal Preferences: Identify packaging attributes universally valued by consumers, such as sustainability, practicality, and clear communication, to establish baseline standards for effective design.
5. Provide Actionable Insights: Offer recommendations for food industry stakeholders to design packaging that balances creativity with functionality, aligning with consumer expectations while achieving differentiation in a competitive market.

By addressing these objectives, the study aims to contribute to the strategic understanding of packaging design as a critical tool in consumer engagement and brand development within the food industry. It seeks to guide brands in leveraging packaging to create meaningful consumer experiences, foster loyalty, and drive purchase decisions in alignment with evolving market trends and demographic preferences.

RESEARCH METHODOLOGY

The research paper titled *"The Impact of Packaging Design on Consumer Perception and Purchase Behavior in the Food Industry"* employs a quantitative research methodology to systematically explore the relationship between packaging design and consumer behavior. This section outlines the study's research design, sampling strategy, data collection methods, and data analysis approach.

RESEARCH DESIGN

The study adopts a descriptive and analytical research design to investigate the influence of various packaging elements—such as aesthetics, functionality, and emotional resonance—on consumer perception and purchase behavior. The structured approach enables a comprehensive examination of how specific packaging attributes shape consumer attitudes and decision-making processes.

SAMPLING

The study sample consists of 300 respondents across different age groups, segmented to ensure demographic diversity. The respondents were categorized as follows:

- **18–28 years**: 46.7% of the sample (140 respondents)
- **29–38 years**: 40.0% of the sample (120 respondents)
- **39–48 years**: 7.3% of the sample (22 respondents)
- **49–58 years**: 3.0% of the sample (9 respondents)
- **59 years and above**: 3.0% of the sample (9 respondents)

The segmentation reflects a significant representation of younger consumers (18–38 years), who collectively constitute 86.7% of the total respondents. This focus aligns with the study's objective of understanding the influence of packaging on demographics most engaged with its design.

DATA COLLECTION

Data were collected through a structured survey instrument comprising 15 items designed to capture various dimensions of packaging design and its impact on consumer behavior. Respondents rated their agreement with statements about packaging features, such as clarity of information, emotional connection, aesthetic appeal, and functionality, using a Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Key survey questions included:

1. The influence of packaging design on product perception.
2. The role of visual elements (e.g., colors, shapes) in attracting attention.
3. Preferences for innovative or eco-friendly packaging.
4. The impact of packaging on brand trust and purchase intent.

The survey instrument demonstrated high reliability, with a Cronbach's Alpha score of 0.855, validating its robustness for measuring consumer attitudes.

DATA ANALYSIS

The collected data were analyzed using descriptive and inferential statistical methods. Descriptive statistics provided insights into the demographic distribution and overall trends in responses. Inferential statistics, including Analysis of Variance (ANOVA), were employed to identify significant differences in perceptions and behaviors across age groups.

Key findings include:

- Significant differences in emotional connection ($p = 0.021$), clarity and trust ($p = 0.000$), and functionality ($p = 0.012$) across demographics.
- Younger consumers (18–38) displayed higher sensitivity to aesthetic and emotional aspects, while older consumers emphasized clarity and functionality.

Ethical Considerations

The study adhered to ethical research practices, ensuring respondent anonymity and voluntary participation. Data were used exclusively for academic purposes, maintaining transparency and confidentiality throughout the research process.

Table 1: Descriptive Analysis based on AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	59 ABOVE	9	3.0	3.0	3.0
	49- 58	9	3.0	3.0	6.0
	39-48	22	7.3	7.3	13.3
	29-38	120	40.0	40.0	53.3
	18-28	140	46.7	46.7	100.0
	Total	300	100.0	100.0	

Interpretation: The majority of respondents belong to the age group **18–28**, accounting for **46.7%** of the total sample. This indicates that younger consumers are the most significant demographic in the study, suggesting their strong engagement with packaging design and its influence on their behavior. The age group **29–38** represents the second-largest portion, with **40%** of the total respondents. This group, likely comprising young professionals and families, also demonstrates a considerable interest in the study's focus. The age groups **39–48** and **49–58** have smaller representations, at **7.3%** and **3.0%,** respectively. These groups may have distinct perspectives on packaging design, possibly focusing on practicality and clarity rather than aesthetic appeal.

Respondents aged **59 and above** constitute the smallest segment, also at **3.0%,** indicating limited engagement or influence from packaging design in their purchase behavior. The cumulative percentages show that **86.7%** of respondents fall within the age range of **18–38,** underlining the significant influence of packaging design on younger consumers who are likely more attuned to visual and emotional brand connections. Packaging strategies should prioritize appealing to the preferences of the 18–28 and 29–38 age groups. This could include vibrant colors, innovative designs, and clear product information that resonate with tech-savvy, visually-oriented consumers. While smaller in representation, older age groups (39 and above) may value functionality, ease of use, and sustainability in packaging.

Table 2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.855	.854	15

Interpretation: The Cronbach's Alpha is **0.855,** indicating high reliability of the survey instrument. The value based on standardized items is **0.854**, closely aligned with the unstandardized Cronbach's Alpha. This similarity suggests that the standardization of items does not significantly alter the reliability, confirming the robustness of the scale. The reliability is calculated for **15 items** in the survey. This indicates that the instrument comprehensively measures various aspects related to packaging design, including consumer perception, emotional brand connection, and purchase behavior.

Table 3: Description in reference to ANOVA

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
							Lower Bound	Upper Bound			
A1	59 ABOVE		9	4.56	.726	.242	4.00	5.11	3	5	
	49- 58		9	4.56	.726	.242	4.00	5.11	3	5	
	39-48		22	3.82	.958	.204	3.39	4.24	3	5	
	29-38		120	4.38	.712	.065	4.25	4.51	3	5	
	18-28		140	4.49	.705	.060	4.38	4.61	3	5	
	Total		300	4.40	.746	.043	4.32	4.49	3	5	
	Model	Fixed Effects			.730	.042	4.32	4.49			
		Random Effects				.128	4.05	4.76			.038
A2	59 ABOVE		9	4.33	.866	.289	3.67	5.00	3	5	
	49- 58		9	4.33	.707	.236	3.79	4.88	3	5	
	39-48		22	3.73	.827	.176	3.36	4.09	3	5	
	29-38		120	4.38	.711	.065	4.25	4.50	3	5	
	18-28		140	4.49	.704	.060	4.37	4.60	3	5	
	Total		300	4.38	.742	.043	4.29	4.46	3	5	
	Model	Fixed Effects			.721	.042	4.29	4.46			
		Random Effects				.142	3.98	4.77			.048
A3	59 ABOVE		9	4.67	.500	.167	4.28	5.05	4	5	

	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	4.32	.477	.102	4.11	4.53	4	5	
	29-38		120	4.39	.639	.058	4.28	4.51	3	5	
	18-28		140	4.61	.559	.047	4.51	4.70	3	5	
	Total		300	4.50	.593	.034	4.43	4.56	3	5	
	Model	Fixed Effects			.585	.034	4.43	4.56			
		Random Effects				.082	4.27	4.72			.014
A4	59 ABOVE		9	4.56	.527	.176	4.15	4.96	4	5	
	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	4.23	.429	.091	4.04	4.42	4	5	
	29-38		120	4.35	.644	.059	4.23	4.47	3	5	
	18-28		140	4.58	.588	.050	4.48	4.68	3	5	
	Total		300	4.46	.608	.035	4.39	4.53	3	5	
	Model	Fixed Effects			.599	.035	4.39	4.52			
		Random Effects				.089	4.21	4.70			.018
A5	59 ABOVE		9	4.56	.527	.176	4.15	4.96	4	5	
	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	4.27	.456	.097	4.07	4.47	4	5	
	29-38		120	4.43	.631	.058	4.31	4.54	3	5	
	18-28		140	4.54	.593	.050	4.44	4.63	3	5	
	Total		300	4.47	.597	.034	4.40	4.54	3	5	
	Model	Fixed Effects			.596	.034	4.40	4.54			

		Random Effects				.044	4.35	4.59			.002
A6	59 ABOVE		9	4.22	.833	.278	3.58	4.86	3	5	
	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	3.86	.710	.151	3.55	4.18	3	5	
	29-38		120	4.14	.690	.063	4.02	4.27	3	5	
	18-28		140	4.13	.687	.058	4.01	4.24	3	5	
	Total		300	4.13	.692	.040	4.05	4.21	3	5	
	Model	Fixed Effects			.690	.040	4.05	4.21			
		Random Effects				.054	3.98	4.28			.003
A7	59 ABOVE		9	4.22	.833	.278	3.58	4.86	3	5	
	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	3.86	.710	.151	3.55	4.18	3	5	
	29-38		120	4.15	.694	.063	4.02	4.28	3	5	
	18-28		140	4.12	.683	.058	4.01	4.24	3	5	
	Total		300	4.13	.692	.040	4.05	4.21	3	5	
	Model	Fixed Effects			.690	.040	4.05	4.21			
		Random Effects				.055	3.97	4.28			.004
A8	59 ABOVE		9	4.33	.866	.289	3.67	5.00	3	5	
	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	3.82	.664	.142	3.52	4.11	3	5	
	29-38		120	4.16	.698	.064	4.03	4.28	3	5	

	18-28		140	4.13	.677	.057	4.02	4.24	3	5	
	Total		300	4.13	.691	.040	4.05	4.21	3	5	
	Model	Fixed Effects			.687	.040	4.06	4.21			
		Random Effects				.070	3.94	4.33			.009
A9	59 ABOVE		9	4.22	.833	.278	3.58	4.86	3	5	
	49- 58		9	4.44	.527	.176	4.04	4.85	4	5	
	39-48		22	3.86	.710	.151	3.55	4.18	3	5	
	29-38		120	4.18	.706	.064	4.05	4.30	3	5	
	18-28		140	4.11	.669	.057	4.00	4.23	3	5	
	Total		300	4.13	.691	.040	4.05	4.21	3	5	
	Model	Fixed Effects			.689	.040	4.06	4.21			
		Random Effects				.059	3.97	4.30			.005
A10	59 ABOVE		9	4.44	.726	.242	3.89	5.00	3	5	
	49- 58		9	4.56	.726	.242	4.00	5.11	3	5	
	39-48		22	3.91	.868	.185	3.52	4.29	3	5	
	29-38		120	4.31	.786	.072	4.17	4.45	3	5	
	18-28		140	4.32	.752	.064	4.20	4.45	3	5	
	Total		300	4.30	.777	.045	4.21	4.38	3	5	
	Model	Fixed Effects			.773	.045	4.21	4.38			
		Random Effects				.076	4.09	4.51			.010

A11	59 ABOVE		9	4.22	.667	.222	3.71	4.73	3	5	
	49- 58		9	4.44	.726	.242	3.89	5.00	3	5	
	39-48		22	3.95	.899	.192	3.56	4.35	3	5	
	29-38		120	4.34	.794	.072	4.20	4.49	3	5	
	18-28		140	4.31	.748	.063	4.18	4.43	3	5	
	Total		300	4.30	.777	.045	4.21	4.38	3	5	
	Model	Fixed Effects			.776	.045	4.21	4.38			
		Random Effects				.058	4.13	4.46			.004
A12	59 ABOVE		9	4.56	.726	.242	4.00	5.11	3	5	
	49- 58		9	4.56	.726	.242	4.00	5.11	3	5	
	39-48		22	3.95	.899	.192	3.56	4.35	3	5	
	29-38		120	4.29	.782	.071	4.15	4.43	3	5	
	18-28		140	4.32	.752	.064	4.20	4.45	3	5	
	Total		300	4.30	.777	.045	4.21	4.38	3	5	
	Model	Fixed Effects			.774	.045	4.21	4.38			
		Random Effects				.071	4.10	4.49			.008
A13	59 ABOVE		9	4.00	.707	.236	3.46	4.54	3	5	
	49- 58		9	4.78	.441	.147	4.44	5.12	4	5	
	39-48		22	3.95	.722	.154	3.63	4.27	3	5	
	29-38		120	4.27	.645	.059	4.15	4.38	3	5	
	18-28		140	4.31	.750	.063	4.19	4.44	3	5	
	Total		300	4.27	.707	.041	4.19	4.35	3	5	

	Model	Fixed Effects			.699	.040	4.19	4.35			
		Random Effects				.094	4.01	4.54			.019
A14	59 ABOVE		9	4.11	.782	.261	3.51	4.71	3	5	
	49- 58		9	4.78	.441	.147	4.44	5.12	4	5	
	39-48		22	3.95	.722	.154	3.63	4.27	3	5	
	29-38		120	4.28	.638	.058	4.17	4.40	3	5	
	18-28		140	4.31	.748	.063	4.18	4.43	3	5	
	Total		300	4.28	.705	.041	4.20	4.36	3	5	
	Model	Fixed Effects			.698	.040	4.20	4.36			
		Random Effects				.088	4.03	4.53			.016
A15	59 ABOVE		9	4.11	.782	.261	3.51	4.71	3	5	
	49- 58		9	4.67	.500	.167	4.28	5.05	4	5	
	39-48		22	3.95	.722	.154	3.63	4.27	3	5	
	29-38		120	4.28	.648	.059	4.16	4.39	3	5	
	18-28		140	4.31	.748	.063	4.18	4.43	3	5	
	Total		300	4.27	.707	.041	4.19	4.35	3	5	
	Model	Fixed Effects			.702	.041	4.19	4.35			
		Random Effects				.077	4.06	4.49			.011

Interpretation: Across all age groups, the mean scores for most items are consistently above 4, indicating that respondents generally agree or strongly agree with the statements related to the influence of packaging design on their perceptions and behaviors. These groups

consistently exhibit higher mean scores across most items, such as **A1–A5** (e.g., attractiveness of design, emotional connection, and purchase intent). Typically range from **4.28 to 4.58** for 18–28 and **4.14 to 4.43** for 29–38. Younger consumers are more influenced by packaging design, valuing its aesthetic appeal, emotional connection, and functionality.

Mean scores are slightly lower, generally between **3.82 and 4.27.** This group may prioritize practical aspects (e.g., clarity of information) over visual appeal, showing a more moderate impact of packaging design on their behaviors.

Older age groups (49–58 and 59+) demonstrate strong agreement with certain items, such as **A1** (visual appeal) and **A12** (trust in brands with premium packaging), with mean scores around **4.44–4.56.** However, their engagement with other aspects, such as emotional connection, is slightly lower compared to younger groups. The analysis highlights the significant role of packaging design in influencing consumer perceptions and behaviors across age groups. Younger consumers prioritize emotional and aesthetic aspects, while older groups value practical and trustworthy designs. These insights can help brands tailor packaging strategies to maximize appeal across diverse demographic segments.

Table 4: ANOVA TEST

		Sum of Squares	df	Mean Square	F	Sig.
A1	Between Groups	9.120	4	2.280	4.282	.002
	Within Groups	157.077	295	.532		
	Total	166.197	299			
A2	Between Groups	10.977	4	2.744	5.275	.000
	Within Groups	153.460	295	.520		
	Total	164.437	299			
A3	Between Groups	4.017	4	1.004	2.934	.021
	Within Groups	100.979	295	.342		
	Total	104.997	299			
A4	Between Groups	4.693	4	1.173	3.273	.012
	Within Groups	105.744	295	.358		
	Total	110.437	299			
A5	Between Groups	1.775	4	.444	1.248	.291
	Within Groups	104.955	295	.356		
	Total	106.730	299			
A6	Between Groups	2.541	4	.635	1.332	.258
	Within Groups	140.646	295	.477		
	Total	143.187	299			

A7	Between Groups	2.582	4	.646	1.354	.250
	Within Groups	140.604	295	.477		
	Total	143.187	299			
A8	Between Groups	3.494	4	.874	1.852	.119
	Within Groups	139.172	295	.472		
	Total	142.667	299			
A9	Between Groups	2.802	4	.700	1.477	.209
	Within Groups	139.865	295	.474		
	Total	142.667	299			
A10	Between Groups	4.207	4	1.052	1.759	.137
	Within Groups	176.390	295	.598		
	Total	180.597	299			
A11	Between Groups	3.080	4	.770	1.280	.278
	Within Groups	177.517	295	.602		
	Total	180.597	299			
A12	Between Groups	3.870	4	.968	1.615	.170
	Within Groups	176.726	295	.599		
	Total	180.597	299			
A13	Between Groups	5.438	4	1.360	2.782	.027
	Within Groups	144.148	295	.489		
	Total	149.587	299			
A14	Between Groups	4.921	4	1.230	2.528	.041
	Within Groups	143.559	295	.487		
	Total	148.480	299			
A15	Between Groups	4.025	4	1.006	2.039	.089
	Within Groups	145.561	295	.493		
	Total	149.587	299			

Interpretation:

Items **A1**, **A2**, **A3**, **A4**, **A13**, and **A14** show significant differences between age groups. **A1 (p = 0.002)** indicates that age groups differ significantly in how packaging design influences their perception of the product. **A2 (p = 0.000)** reflects significant differences in the importance of packaging's clarity and information across age groups. **A3 (p = 0.021)** suggests a significant variance in the emotional connection formed through packaging design between

age groups. **A4 (p = 0.012)** demonstrates differences in preferences for packaging functionality and practicality. **A13 (p = 0.027)** and **A14 (p = 0.041)** highlight that age groups differ significantly in their response to specific elements of trust and branding related to packaging design.

Items such as **A5**, **A6**, **A7**, **A8**, **A9**, **A10**, **A11**, **A12**, and **A15** do not show significant differences between age groups. This implies a consistent perception across demographics for these factors for example, **A6–A9** (practicality and usability aspects) and **A10–A12** (general preferences for aesthetic design) may be universally valued across all age groups.

Significant items (**A1, A2, A3, A4**) show varying preferences across age groups, highlighting the need for **age-specific packaging strategies**. Younger consumers (18–28) may value innovative and emotionally engaging designs whereas older consumers (49 and above) might prioritize clarity, trust, and functionality. Non-significant items (**A5, A6, A7, etc.**) suggest universal consumer values. Packaging features like practical usability, general aesthetics, and branding elements resonate equally with all age groups, providing a baseline for design decisions.

The ANOVA analysis reveals significant differences in consumer perception and behavior based on packaging design for certain factors, particularly related to emotional connection, clarity, functionality, and trust. While some aspects are universally appreciated, targeted efforts to cater to age-specific preferences can enhance packaging effectiveness, ultimately driving stronger consumer-brand connections and purchase behaviors.

IMPLICATIONS

The findings of this study have significant implications for stakeholders in the food industry, particularly in marketing, design, and brand management. Packaging design has emerged as a critical factor in influencing consumer perception and purchase behavior, with distinct preferences observed across various demographic segments.

1. **Targeted Packaging Strategies**

   The study reveals that younger consumers, aged 18–38, who constitute 86.7% of the sample, are more sensitive to visual aesthetics, innovative designs, and emotional brand connections. To cater to this demographic, brands should prioritize vibrant colors, creative packaging shapes, and eco-friendly materials that align with modern sensibilities. For older age groups, emphasizing functionality, clarity, and trustworthiness in design can enhance engagement.

2. **Brand Differentiation**

   With packaging identified as a key differentiator in crowded retail environments, brands can leverage unique designs to establish strong emotional connections and enhance perceived product quality. Elements like clear product information and premium aesthetics should be integrated to appeal universally, as evidenced by the consistent appreciation of these factors across all age groups.

3. **Sustainability and Functionality**

   The increasing importance of eco-friendly packaging materials and practical features, such as resealability, highlights an opportunity for brands to appeal to environmentally conscious and convenience-seeking consumers. Implementing sustainable practices in packaging design can also enhance brand loyalty and trust.

4. **Consumer Trust and Loyalty**

   Packaging attributes like premium quality cues and clear branding positively influence trust, as indicated by the high scores among older demographics. By embedding these elements in design, brands can foster long-term loyalty and repeat purchases.

5. **Research and Development**

   The significant variances identified through ANOVA analysis, particularly in emotional connection ($p = 0.021$) and clarity of information ($p = 0.000$), suggest that brands must continually invest in consumer research to adapt packaging designs to evolving preferences. Collaborative efforts between marketing and design teams can optimize packaging for diverse consumer needs.

CONCLUSION

This study underscores the pivotal role of packaging design in shaping consumer perceptions and driving purchase behavior in the food industry (Azzi et al., 2022; Orth & Malkewitz, 2008). By examining the preferences and attitudes of 300 respondents across diverse age groups, the research highlights the need for targeted and innovative packaging strategies (Field, 2018). Younger consumers (18–38 years) emerge as the primary demographic driving engagement with packaging design, valuing aesthetics, innovation, and emotional connections (Steenis et al., 2017; Prakash & Srivastava, 2021). Older age groups, while smaller in representation, prioritize functionality and trustworthiness, demonstrating the need for differentiated approaches to packaging design (Silayoi & Speece, 2004; Nancarrow et al., 1998).

The study's findings also point to universal packaging attributes—such as clear product information, sustainability, and practical usability—that resonate with all age groups (Underwood et al., 2021; Azzi et al., 2012). These elements provide a foundation for effective packaging strategies that cater to both niche and broad market segments. Packaging design is more than a visual tool; it is a strategic medium for communicating brand values, building emotional connections, and differentiating products in competitive markets (Underwood, 2003; Orth & Malkewitz, 2008). By aligning packaging with consumer expectations and market trends, brands can enhance their appeal, foster loyalty, and achieve sustained growth in the dynamic food industry landscape (Silayoi & Speece, 2007; Prakash & Srivastava, 2021).

Future research could expand on this study by exploring cultural influences and the impact of digital integration in packaging, further enriching the understanding of consumer behavior.

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