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Research Article

Packaging as a Strategic Communication Tool: Influencing Consumer Perception in Processed Food Markets

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Abstract: In today's hyper-competitive processed food industry, packaging has evolved from being a functional necessity to a strategic communication tool that significantly influences consumer perceptions and purchase decisions. This study explores the impact of packaging on the purchase of processed food, with a focus on consumer trust, emotional response, and information clarity. Drawing from behavioural theories and empirical analysis, the research assesses how elements such as packaging design, brand claims, nutritional labelling, and regulatory trust affect long-term consumer engagement. Using a structured questionnaire distributed among 392 respondents from urban Mumbai, the study analyses demographic variables, packaging importance, and consumer scepticism toward health claims. Statistical methods including ANOVA and regression analysis reveal that packaging is a crucial factor in consumer decision-making, especially among females, higher-income, and more educated groups. Notably, claims such as "100% natural" and "low fat" are met with increasing doubt, and packaging aesthetics are considered less influential than nutritional transparency and expiry clarity. The findings underscore the necessity for brands to adopt transparent, informative, and regulation-compliant packaging practices to build and retain consumer trust. Recommendations include emphasizing key informational attributes, aligning design with target demographics, and enhancing credibility through honest communication. The study provides insights that can assist marketers, regulators, and policymakers in designing packaging that promotes ethical marketing while empowering consumer decision-making.

Keywords: Processed Foods, Packaging Design, Consumer Behavior, Brand Trust, Health Communication

INTRODUCTION

Processed foods are defined as food items that undergo modifications from their natural form through techniques like freezing, canning, drying, refrigeration, baking, or the addition of preservatives and synthetic ingredients. These alterations are typically aimed at extending shelf life, enhancing flavor, or increasing convenience for consumers. Common examples include packaged dairy items, ready-to-eat meals, snacks, and canned goods (Corrêa et al., 2018). The processed food sector has expanded rapidly over the last few decades, largely due to factors such as urbanization, evolving lifestyles, and rising demand for convenient food options. Increased global economic development and higher disposable incomes have fueled a growing preference for packaged and processed foods (Verma & Chawla, 2020). Shifts in household structures, such as the rise of dual-income families, along with time limitations and the need for convenient meal solutions, have further accelerated this trend. Moreover, a surge in interest in healthier, organic, and minimally processed alternatives has redefined consumer expectations (Rangan et al., 2016). In developing economies, purchasing behaviors have also been reshaped by enhanced access to technology, greater international exposure, increasing urban migration, educational advancement, and growing health awareness (Kumar & Kapoor, 2019).

The proliferation of digital tools—like mobile ordering and food delivery services—has added momentum to this transformation, especially in urban regions (Barrett et al., 2019). In this evolving market, packaging has taken on a strategic role that extends far beyond its conventional purpose of protection. Today, it acts as a central vehicle for brand messaging, capable of shaping perceptions, communicating values, and influencing purchase intent. Elements such as typography, color schemes, material, and imagery all contribute to how a product is perceived. For instance, specific color palettes can evoke health-related associations or indulgent qualities, affecting how consumers interpret the product (Steiner & Florack, 2023). The psychological impact of packaging is considerable. Features like texture, resealability, and sustainable materials shape perceptions of product quality and trustworthiness. Packaging also functions as an information source—highlighting nutritional values, health claims, or brand promises—which guides first-time purchases and builds brand loyalty over time (Berthold et al., 2022). In markets crowded with similar offerings, thoughtful design can serve as a major differentiator, making products stand out on shelves and conveying perceived value.

However, the sophistication of modern packaging design has given rise to concerns around potentially misleading communications. Subtle visual and textual cues may create expectations that are inconsistent with a product's actual contents. Such practices raise ethical questions and can

erode consumer trust (Schifferstein et al., 2021). In response, marketing strategies are increasingly geared toward health-conscious audiences, who are actively seeking cleaner labels and more transparent packaging (Huang & Lu, 2015; Laureti & Benedetti, 2017). Because intrinsic product features such as taste and nutritional quality cannot be fully assessed before consumption, consumers often rely on external cues—like brand name, price, and packaging aesthetics—to make purchasing decisions. These cues shape expectations, influence attitudes, and impact the likelihood of purchase (Mhurchu et al., 2018). With the widespread adoption of self-service retail models and the dominance of supermarkets, most purchase decisions are now made at the point of sale. Research suggests that nearly 70% of buying choices occur in-store, where consumers evaluate options based on what they see in real time. Labeling plays a vital role in these decisions, especially when consumers are selecting health-oriented products. For fast-moving items such as snacks and ready meals, impulse purchases are frequent due to low cost and high availability (Mhurchu et al., 2018).

As retail environments become more digitized and self-service technologies continue to expand, packaging's importance in influencing consumer behavior is more pronounced than ever. Despite widespread acknowledgment of packaging's significance, there is still limited understanding of how consumers perceive its external attributes, particularly among younger populations in emerging markets like India (Fernqvist et al., 2015). Few studies have delved into the views of Indian youth regarding the packaging of processed food products. This research aims to address that gap by examining how packaging elements influence consumer behavior and long-term engagement. By analyzing consumer trust in packaging claims, the perceived credibility of regulatory information, and the design elements that drive appeal, this study intends to explore how packaging functions as a strategic communication tool. Special attention is given to the potential for misleading packaging to affect consumer trust and repeated product usage in the context of India's growing processed food market (Monteiro et al., 2022).

PACKAGING

Packaging encompasses the entire process of creating and designing a product's exterior, often representing the first point of interaction between the consumer and the brand. It plays a critical role in capturing consumer attention and guiding purchase decisions. In many ways, packaging acts as a silent advertisement, influencing consumer perception both at the point of sale and during product usage. Prior to purchase, it helps communicate the brand's essence, while afterward, it shapes the consumer's experience and satisfaction with the product.

From a traditional marketing perspective, packaging serves several key purposes: it aids brand recognition, delivers essential product information, supports efficient distribution and logistics, ensures product preservation, and enhances usability (Kotler & Keller, 2012). In this sense, packaging is not just a protective layer but an integral part of the marketing mix and brand strategy. Designing effective packaging is a strategic communication endeavor where the visual elements are crafted to stand out in a competitive retail environment. It helps create a meaningful and persuasive relationship with potential buyers, encouraging purchase behavior. In the context of food products, packaging design has become a specialized discipline, acting as a medium to both inform and reassure consumers about their choices. The packaging becomes a physical embodiment of the brand's values, identity, and promise to its audience (Calver, 2007). Given that packaging serves as the most visible and tactile element of a product, it is a vital component of the overall marketing strategy. It is what consumers will recognize, remember, and often base their purchasing decisions on (Ambrose & Harris, 2011). For food items, effective nutrition labeling on the packaging is essential—it must present clear and accessible information regarding the product's nutritional and health benefits. This empowers consumers to make informed choices, particularly in an environment where health-conscious purchasing is on the rise.

To understand consumer responses to packaging and labeling, dual-processing models offer valuable insight. These frameworks explain how both cognitive and emotional processes influence how packaging is interpreted and how decisions are made based on that interpretation (Grunert & Aachmann, 2016). In practical terms, food packaging is indispensable—not just for marketing purposes, but for preserving the product across time and geographical distance. It is seen as one of the most effective tools in marketing, enabling differentiation in a saturated market. As competition intensifies, packaging design has emerged as a powerful method for distinguishing a product and reinforcing brand preference (Shekhar & Ravendran, 2013).

LITERATURE REVIEW

Processed food

Processed food refers to any food altered from its natural state for convenience, safety, or shelf-life. This includes methods such as canning, freezing, adding preservatives, or fortifying nutrients. Grunert KG, et.al (2010) emphasized that while consumers often associate processing with artificial additives or reduced healthfulness, not all processed foods are unhealthy. Consumers' understanding of "processed" varies by demographic, culture, and education level, affecting their perceptions and purchase decisions.

Fernqvist and Ekelund (2014) found that extrinsic product cues like brand name, packaging design, and processing level strongly influence perceived quality and trust, even when intrinsic characteristics remain constant.

The global processed food industry has witnessed exponential growth over the past two decades, driven by urbanization, technological advancements, and changing consumer lifestyles. According to Kearney (2010) and Popkin & Reardon (2018), emerging markets such as India, China, and Brazil have experienced a surge in processed food consumption due to rising disposable income, dual-income households, and exposure to Western dietary

patterns.

The processed food industry has witnessed exponential growth over the past decade, driven by urbanization, changing lifestyles, rising disposable incomes, and globalization of food supply chains. According to Kumar and Kapoor (2019), emerging economies like India and China are experiencing a rapid shift from traditional diets to packaged and convenience foods, largely due to dual-income households, time scarcity, and exposure to Western diets

Packaging as a Communication Tool

Packaging plays a central role in communication between the manufacturer and the consumer, serving as the first point of contact in the purchase decision process (Underwood, Klein, & Burke, 2001). According to Silayoi and Speece (2007), packaging not only conveys information about the product but also evokes emotions, creates a brand identity, and forms a visual appeal that can influence consumer choices. Packaging is a powerful form of non-verbal communication, where visual elements such as color, design, typography, and imagery serve as cues for quality, value, and health attributes (Chakraborty, 2013).

Brands have recognized the impact of these visual cues, and strategic packaging design has been found to be an essential aspect of differentiating products in crowded markets (Van Herpen, Pieters, & Zeelenberg, 2009). In processed food markets, where products are often similar in function, packaging serves as a differentiator, providing consumers with cues about a product's superiority or desirability (Erasmus, Boshoff, & Rousseau, 2001).

Recent studies have emphasized how consumer perception of processed foods is heavily influenced by packaging design, labeling, and branding. According to Silayoi and Speece (2007), visual cues on packaging—like colors, images, and health claims—play a vital role in shaping perceptions of quality and healthiness. More recently, Chen et al. (2020) found that front-of-pack (FOP) labeling and simplified nutritional information can reduce consumer confusion and lead to healthier food choices.

Berthold, Guion, and Siegrist (2022) highlighted that packaging materials and color schemes significantly impact consumer expectations and willingness to purchase. Consumers tend to associate certain materials (e.g., paper vs. plastic) and colors (green, brown) with "naturalness" or healthiness, even if the product inside doesn't support those associations.

Consumer Perception of Packaging and Product Quality

Numerous studies have shown that packaging influences consumers' perceptions of product quality. A study by Olson and Jacoby (1972) found that the aesthetics of packaging directly impact the perceived quality of a product, with consumers often associating sophisticated or premium designs with higher quality. This is particularly relevant in processed food markets, where consumer perceptions of product quality can be heavily swayed by the presentation and design of the packaging. For example, packaging that conveys cleanliness, freshness, or health benefits often leads to more favorable quality judgments (Chandon, Wansink, & Laurent, 2000).

Furthermore, packaging has been shown to influence perceptions of healthiness. Studies by Mormann and Huettel (2012) demonstrate that food packaging that highlights nutritional claims (e.g., "low-fat," "high-protein," or "organic") can positively influence consumer perceptions, even when the actual product content does not necessarily support such claims. Thus, packaging serves as a key communication tool that shapes how consumers perceive the healthiness and quality of food products.

Packaging and Emotional Response

Packaging is not only about delivering information but also creating an emotional connection between the consumer and the product. Affective responses to packaging have been well-documented in consumer behavior studies. For instance, Crilly, Moultrie, and Clarkson (2004) argue that packaging can evoke specific emotional responses based on design elements such as color, texture, and shape. Packaging designs that align with consumer preferences can generate positive emotional reactions, making the product more attractive and leading to higher purchasing intent

Research by Labrecque and Milne (2012) also highlights the role of packaging in brand identity and consumer loyalty. Consumers often associate certain colors, logos, and design elements with specific emotional experiences, which in turn reinforces brand loyalty. In processed food markets, where competition is fierce, packaging can thus foster a long-term emotional bond with the consumer, influencing future purchase behavior.

Eco-Friendly Packaging and Consumer Preferences

In recent years, there has been a growing demand for sustainable and eco-friendly packaging. Consumers, particularly Millennials and Gen Z, are increasingly concerned about environmental issues, and this concern extends to packaging choices. According to a study by Magnier and Schoormans (2015), consumers are more likely to purchase products that feature eco-friendly packaging, associating it with responsible consumption and ethical behavior. This trend has become particularly relevant in the processed food market, where there is heightened scrutiny over the use of plastic, packaging waste, and the environmental impact of food production.

Studies by Nordin and Selke (2018) confirm that sustainable packaging can positively influence consumer perceptions of a brand's environmental commitment. In fact, eco-friendly packaging has been found to enhance the perceived value of a product and can lead to increased consumer preference, even when the actual product's quality is similar to non-eco-friendly alternatives. This shift toward sustainability requires brands in the processed food market to rethink their packaging strategies and incorporate environmentally friendly materials.

Packaging Size, Functionality, and Consumer Behavior

The size and functional aspects of packaging play a critical

role in shaping consumer purchasing behavior, particularly within the processed food sector. Research has shown that smaller package formats are often associated with higher perceived value and quality, as they cater to consumer needs for portion control and convenience—attributes especially appealing to health-conscious individuals (Raghubir & Krishna, 1999).

Beyond size, the usability of packaging—including features like ease of opening, resealability, and efficient storage—has a direct impact on customer satisfaction. According to Wansink and van Ittersum (2003), products packaged in a way that simplifies handling and storage tend to see increased usage and consumer approval. In the competitive landscape of processed foods, innovations such as single-serve packs and microwave-ready containers have gained popularity, enhancing the overall user experience and contributing to greater brand loyalty and repeat purchases.

Cultural and Demographic Influence on Packaging Preferences

Consumer preferences regarding packaging are often shaped by demographic and cultural differences. According to Steenkamp and Wedel (1991), variables such as age, gender, income level, and cultural context can significantly affect how individuals interpret and respond to packaging elements. For instance, younger audiences may be more attracted to packaging that is colorful, modern, and expressive, while older consumers often favor simpler, more practical designs that emphasize clarity and functionality.

In the context of processed food marketing, these variations necessitate tailored packaging strategies for different consumer groups. As Kotler and Keller (2012) highlight, emerging social trends—particularly the growing emphasis on health, wellness, and transparency—are influencing packaging designs, prompting brands to showcase nutritional information and health claims more prominently. This shift reflects a broader movement toward packaging that not only appeals aesthetically but also aligns with evolving consumer values and expectations.

The Role of Packaging in Brand Loyalty

Packaging serves as a critical component in establishing and maintaining brand loyalty, especially within the highly competitive processed food industry. Aaker (1991) highlights that packaging significantly shapes consumer perceptions of a brand's identity and trustworthiness. In markets where products offer similar functions and features, such as processed foods, distinctive packaging becomes a key differentiator, helping brands stand out and connect with target audiences. Moreover, positive consumer interactions with packaging—such as ease of use, appealing design, and reliability—can reinforce trust, encouraging repeat purchases and fostering long-term loyalty (Melnyk, Van Herpen, & Trijp, 2013).

Labeling, Regulation, and Consumer Trust

Trust in food labeling and regulatory frameworks remains a central concern in the processed food industry. Sadler et al. (2021) emphasize ongoing challenges in the classification of processed foods, noting that inconsistencies in definitions can complicate the development of clear and enforceable labeling policies. As a result, many consumers remain doubtful of product claims such as "natural," "low fat," or "sugar-free," particularly when such claims lack third-party certification or are perceived as marketing tactics rather than factual disclosures (Wansink & Chandon, 2014). This skepticism can erode consumer confidence and hinder long-term brand loyalty. Research has also highlighted how ambiguous or misleading packaging messages can influence purchasing behavior. Schifferstein, de Boer, and Lemke (2021) demonstrate that even packaging which adheres to existing legal standards can mislead consumers if not communicated transparently. Similarly, Vignola, Nazmi, and Freudenberg (2021) developed a model showing how marketing strategies—such as "health halos" or emotionally driven imagery—can increase the attractiveness of ultra-processed foods, often masking their actual nutritional profiles.

The psychological effects of packaging, including color and design, further complicate consumer perception. Steiner and Florack (2023), in a systematic review, found that **packaging color alone can influence perceived healthiness**, regardless of a product's true nutritional content. These findings underscore the importance of regulating not only what information is presented, but also how it is visually conveyed. To address these challenges, several researchers advocate for stronger regulations and improved consumer education. Graham et al. (2012), for instance, support the adoption of simplified front-of-pack labeling systems—such as color-coded or traffic light schemes—that can help consumers make more informed dietary choices and reduce the risk of inadvertent overconsumption. Finally, the lack of a universally accepted definition for "processed" food continues to cause confusion. Sadler et al. (2021) argue that the absence of harmonized global standards complicates policy implementation and diminishes clarity for both consumers and regulators. Addressing this issue through **standardized terminology and clearer labeling protocols** is vital for fostering trust and improving the transparency of processed food marketing.

Objectives & Hypothesis of the study:

Below are the objectives of this research

1. To investigate how packaging functions as a strategic communication tool that shapes consumer perceptions and buying decisions in the processed food industry.
2. To evaluate the significance of various packaging elements—such as price, nutritional labelling, expiration dates, brand identity, and visual design—in influencing purchase decisions.
3. To assess the effect of demographic factors (including age, gender, education, and income) on consumer perceptions and preferences regarding processed food packaging.
4. To examine consumer trust in packaging claims and regulatory information, and how this trust

affects their purchasing behavior.

5. To analyze how uncertainty towards potentially misleading packaging communication impact long-term consumer engagement and brand loyalty.

Below are the hypothesis of this research

H1: Packaging has a significant influence on consumer purchase decisions in the processed food market.
H2: There is a meaningful relationship between a consumer's level of education and the importance they assign to packaging information..
H3: Gender plays a significant role in how packaging influences consumer buying decisions.
H4: Consumers with higher income levels attribute more importance to packaging features compared to those with lower incomes.
H5: A significant association exists between consumer trust in packaging claims (e.g., "100% natural," "low fat") and their reliance on packaging for making purchase decisions.
H6: Consumers who actively avoid artificial ingredients are more likely to use packaging information as a critical factor in their decision-making process.
H7: Consumers exhibit a significant level of trust in the regulatory standards associated with processed food packaging.

Need/Scope of the study

In today's highly competitive processed food industry, packaging has evolved beyond its traditional functional role to become a powerful strategic communication tool. This study seeks to explore how packaging influences consumer perception, preference, and purchase behavior, providing valuable insights for both academic research and industry practice. As consumers are increasingly presented with a multitude of similar processed food options, packaging often acts as a key differentiator, signaling product value, quality, and uniqueness (Silayoi & Speece, 2007). With heightened awareness around health, sustainability, and transparency, packaging is now expected to communicate far more than just branding—it must also reflect a product's nutritional value, ethical sourcing, and environmental footprint. As such, the design, messaging, and material used in packaging significantly shape consumer decisions and brand trust. Labels like "organic," "low-fat," or "high-protein" have become influential decision-making cues for health-conscious shoppers (Mormann & Huettel, 2012). Consumers also increasingly examine packaging for clarity, credibility, and alignment with their personal values.

The scope of this study extends to understanding how these visual and textual cues influence consumer behavior in the context of processed foods, where product distinctions are often subtle and primarily perceived through packaging. Given the rising importance of sustainable practices, evolving lifestyle patterns, and heightened nutritional awareness, it is critical for brands to refine their packaging strategies to resonate with their target audience (Van Herpen, Pieters, & Zeelenberg, 2009). By focusing on the communication power of packaging, this study aims to bridge a gap in existing literature, particularly in the context of dynamic and rapidly growing markets. It will contribute to a better understanding of how brands can design packaging that not only attracts attention but also builds long-term consumer loyalty. Ultimately, the research underscores the importance of packaging as a strategic asset—one that blends marketing, psychology, and design to influence consumer behavior in a meaningful way.

METHODOLOGY

Research Design: The primary goal of the study was to determine how consumers interpret information on processed food product packaging when making judgments about what to buy. The process started with a comprehensive study of the literature, looking at previous research on consumer behavior, perception, packaging as a source of information, packaging's function, and how it affects decisions to buy. This study adopts a descriptive and quantitative research design, aiming to investigate the role of packaging as a strategic communication tool and its influence on consumer perception and purchasing behavior within the processed food industry. The research explores correlations between packaging elements and demographic variables to derive consumer insights.

Sampling method: A simple random sampling technique was used to ensure unbiased representation across various demographics. The target population consisted of urban consumers from Mumbai, as this demographic reflects high exposure to processed food products and modern retail environments.

Sample Size: 392 respondentsLocation: Urban Mumbai (Central, Western, and Harbour zones) Respondent Profile: Males and females aged 18 and above, varying in education, income, and occupation.

Data was collected through a structured questionnaire survey, designed to measure consumer preferences, frequency of processed food purchases, trust in label claims, and perceived importance of packaging components. The questionnaire included:

Demographic questions (gender, age, education, income) Behavioral questions (purchase frequency, product preferences) Likert-scale statements (trust in packaging, response to claims, design influence) Rating scales (importance of packaging attributes like price, expiry date, nutritional info) . Collected data were analyzed using SPSS and Excel.

The following statistical techniques used:

Descriptive Statistics: To summarize demographics and response trends. ANOVA (Analysis of Variance): To identify differences in packaging importance across demographic groups.

Regression Analysis: To determine which factors (gender, education, income, age, trust) influence.

Mean, Mode, and Standard Deviation: For interpreting Likert scale responses. Coefficient and Odds Ratio

Analysis: To understand the strength and direction of influence of various independent variables.

Findings & Analysis

Table 1

Demographic Characteristics	Number of respondents	% of respondents
Gender	Male: 114 Female: 278	29.08% 70.9%
Age	18 to 30: 152 31 to 40: 201 41 to 50: 30 50 & above:09	38.7% 51.2% 7.6% 2.29%
Education	Undergraduate: 82 Graduate: 160 Post graduate: 97 Doctorate: 53	20.9% 40.8% 24.7% 13.5
Yearly Income (in rupees)	Upto 5 lakhs: 101 5 lakhs to 10 lakhs: 119 10 lakhs to 15 lakhs: 109 15 lakhs & above: 63	25.7% 30.3% 27.8% 16%

The demographic details of the respondents are shared in the above table highlighting key factors of gender, age, education and income. The majority of the respondents are female (70.9%), only 29.08% of respondents were males. The largest age group is 31 to 40 years (51.2%), followed by 18 to 30 years (38.7%). This suggests that the sample is predominantly made up of young to middle-aged adults. This demographic is often in the early to mid-career stages and might reflect certain lifestyle choices, challenges, or attitudes that are specific to their age group. 41 & above age group only made up a small portion of the sample. The respondents are predominantly graduate level educated (40.8%), followed by postgraduates (24.7%). The undergraduate group forms a smaller portion (20.9%), while doctorate holders make up 13.5% of the sample. Education is likely to correlate with higher knowledge, critical thinking abilities, and professional status. This also suggests that the sample may lean toward people in more professional or intellectual environments. The largest income bracket is 5 to 10 lakhs (30.3%), followed by 10 to 15 lakhs (27.8%). This indicates that most of the respondents fall into the middle-income range, with a significant proportion also falling into the lower middle-income group (up to 5 lakhs). Higher-income respondents (above 10 lakhs) make up about 44.8% of the sample, while lower-income respondents (up to 5 lakhs) are 25.7%. This suggests a moderate to upper-middle-class demographic.

Table 2: How often do you purchase processed food products?

	Number of respondents	**% of respondents**
Daily	**30**	**7.65%**
Weekly	**68**	**17.35%**
Fortnightly	**153**	**39.02%**
Monthly	**113**	**28.84%**
Rarely	**28**	**7.14%**
Never	**0**	**0**

Most respondents (39.02%) purchase processed food products fortnightly (every two weeks). 28.84% purchase processed food products monthly. A significant portion (17.35%) buys processed food weekly. 7.65% buy processed food daily. A smaller percentage of respondents (7.14%) purchase processed food rarely, while no respondents reported purchasing never. This shows that, generally, most respondents purchase processed food products at a moderate frequency, either fortnightly or monthly. Very few are buying them daily or rarely.

Table 3: How important is packaging for purchase decision of processed food products?

	Number of respondents	% of respondents
Extremely important	238	60.71%
Important	116	29.59%

Neutral	24	6.12%
Unimportant	09	2.29
Extremely unimportant	05	1.27%
Mean: 4.46	Mode: 5	Standard Deviation: 0.814

The majority of respondents i.e. 354 out of 392 (238 extremely important & 116 as important) of consumer's view packaging as a key factor in their decision-making. This suggests that packaging plays a significant role in influencing consumer behaviour for processed foods. It could be due to factors like convenience, visual appeal, or the perception of quality that packaging can convey. Only 38 respondents out of 392 were either neutral or did not consider packaging as important in their decision-making process.

The mean value of 4.46 (out of a possible 5) suggests that, on average, respondents consider packaging to be quite important when selecting processed food products. It indicates that most consumers prioritize packaging highly, with many respondents categorizing it as either "very important" or "somewhat important." This suggests that packaging has a strong influence on consumer behaviour for processed foods. The mode of 5, meaning "Very important," reinforces the finding that the majority of consumers (238 out of 392, or 60.71%) view packaging as a crucial factor in their purchasing decisions. The standard deviation (SD) of 0.814 shows that while there is some variation in how important consumers perceive packaging, the responses are relatively clustered around the high-end values (especially "Very important" and "Somewhat important"). A low SD (in this case, below 1) indicates that the responses are fairly consistent, with most respondents falling between "Very important" and "Somewhat important." This suggests that most people share a similar view about the significance of packaging, though there are a few outliers (with responses like "Not very important" or "Not important at all").

Table 4: How important are the following information on processed food packaging

	1	2	3	4	5	Mean	Mode	SD
Serving size	5.8%	12.4%	22.7%	34.9%	24.2%	3.593	4	1.15
Front of packaging	21.6%	18.7%	34.1%	10.4%	15.2%	2.79	3	1.31
Back label nutritional content	6.2%	5.4%	9.7%	39.6%	39.1%	3.99	4	1.12
Brand and product name	4.6%	2.7%	6.8%	58.6%	27.3%	4.01	4	0.93
Manufacturing & expiry date	2.7%	1.8%	2.4%	49.1%	44%	4.29	5	0.83
Price	2.1 %	1.8%	4.6%	41.8%	49.7%	4.35	5	0.82

A significant portion (34.9% + 24.2% = 59.1%) of respondent's view serving size as important or extremely important, indicating that this is a key factor for many consumers when making purchasing decisions. A large group (22.7%) are neutral, which could imply that for some, serving size is secondary to other aspects like price or flavor. A very large portion of consumers (39.6% + 39.1% = 78.7%) find the nutritional content on the back label either important or extremely important. This suggests that many consumers are highly concerned with nutritional information when purchasing processed foods. The relatively low percentages of respondents who find it unimportant (6.2% and 5.4%) indicate that for the majority of consumers, nutritional transparency plays a critical role, especially as health-consciousness continues to grow. 58.6% of respondents consider brand and product name to be important, with 27.3% finding it extremely important. This suggests that brand recognition plays a significant role in purchasing decisions, indicating that many consumers trust established brands or associate brand names with quality. Neutral responses are low (6.8%), suggesting that the brand name is a relatively strong factor for most people, likely due to brand loyalty or trust in quality. A significant 93.1% of respondents consider the manufacturing and expiry date to be either important or extremely important. This shows that consumers are highly concerned with freshness and shelf life when buying processed food products. This could be due to concerns about food safety, product quality, or simply the desire for fresher goods. Expiry date is one of the most critical factors for ensuring the consumer gets a product with a long shelf life or optimal freshness. A majority (49.7%) of respondents consider price to be extremely important, and 41.8% find it important. This suggests that price is one of the most significant factors for consumers when purchasing processed food. Given that processed foods can vary greatly in price, many consumers may be looking for value for money, and price sensitivity is likely a key driver in their purchasing decisions.

	Always	Most of the times	Sometimes	Rarely	never	Mean	Mode	SD
I trust claims made on processed	63 (16.07%)	56 (14.29%)	71 (18.11%)	105 (26.79%)	97 (24.74%)	2.72	2	1.40

food packaging like "low fat", "100% natural", etc.								
I avoid processed food which has too many artificial ingredients	114 (29.1%)	94 (24%)	93 (23.7%)	41 (10.5%)	50 (12.8%)	3.46	5	1.34
Attractive packaging influences more than the actual information about the ingredients	11 (2.8%)	19 (4.8%)	79 (20.2%)	108 (27.6%)	175 (44.6%)	1.94	1	1.04
I believe regulations ensure packaging information is accurate.	22 (5.6%)	44 (11.2%)	74 (18.9%)	167 (42.6%)	85 (21.7%)	2.36	2	1.11

Consumers tend to be cautious as more than half of them hardly ever or never believe what they are told on packaging. Marketing trust gap: "100% natural" and "low fat" claims might no longer be as successful. Stricter labelling or public education could be beneficial as a more transparent regulations may be helpful in restoring trust. A mixed confidence zone (18.1% occasionally) indicates that circumstances (brand, reputation, transparency, etc.) may affect trust. According to the findings, consumers are generally skeptical of claims made on the packaging of processed foods. More over half (51.5%) of those surveyed said they hardly ever or never believe such statements. Only over 30% of respondents indicated moderate to high levels of trust, pointing to a sizable trust gap that could influence consumer behavior and brand loyalty. The distribution is somewhat biased to the right, indicating that although a minority continuously believe these statements, the majority are still wary or dubious. This is corroborated by the mean value of 2.72, which is below the 5-point scale's neutral middle.

A significant majority of respondents (76.8%) said they always, most of the times, or sometimes avoid processed food with too many artificial ingredients. Only 23.3% (Rarely + Never) said they do not avoid such food regularly. The mean score of 3.46 suggests that most people lean toward avoiding artificial ingredients, but not necessarily all the time. The mode being "Always" shows that a large group of health-conscious respondents make this avoidance a firm habit. The data reflects a strong consumer preference for minimizing the intake of artificial ingredients in processed food. Nearly 77% of respondents indicated that they actively avoid such food to varying degrees, with "Always" being the most selected response (29.1%). The average response (mean = 3.46) suggests that many consumers are aware and mindful of ingredients, though not all avoid them consistently. The standard deviation of 1.34 indicates a moderate spread in responses, showing that while most lean toward avoidance, a minority still consume such food with less concern. These results suggest growing consumer consciousness around food content and may highlight an opportunity for food producers to shift toward cleaner labeling and more natural formulations.

The data shows a clear trend of skepticism toward the idea that attractive packaging has more influence than actual ingredient information. A significant majority of respondents (72.2%) selected "Rarely" or "Never", indicating that most people do not let packaging design override the importance of actual content. With a mean score of 1.94, the overall tendency is toward disagreement, leaning just below the "Rarely" level. The mode of "Never", chosen by 44.6% of respondents, further emphasizes this sentiment. The standard deviation of 1.04 shows relatively consistent responses, with fewer outliers compared to more varied data sets. This consistency suggests that the perception of ingredient importance over packaging design is widely shared. Ingredient transparency is a top priority for most consumers, outweighing aesthetic appeal. Packaging design, while still important, may serve better as a supporting factor rather than a primary persuasive tool. Brands may benefit more by investing in clear, honest labeling and educational design, rather than overly stylized packaging alone.

The responses indicate a general lack of strong confidence in regulations ensuring the accuracy of packaging information. With only 5.6% responding "Always" and 11.2% "Most of the times", over half of the respondents (64.3%) chose "Rarely" or "Never". The mean of 2.36 places the average sentiment between "Rarely" and "Sometimes," suggesting moderate uncertainty. The mode ("Rarely") reinforces this view as the most frequently selected response. The standard deviation of 1.11 shows moderate consistency among responses — while most respondents are doubtful, some still maintain a degree of trust. Consumers generally do not fully trust regulatory oversight of packaging claims. There is a clear trust gap between the public and food labeling regulatory standards. Regulatory bodies and food authorities may need to increase transparency and enforcement visibility to restore confidence.

Anova was conducted to find out the importance of packaging on the demographic levels and below table highlights the results

Source	p-value
Education	0.014
Age	0.063
Income	0.039

Education - $p = 0.014 < 0.05$

There is a statistically significant difference in how different education groups value packaging. Likely, higher education correlates with more importance given to packaging.

Age - $p = 0.063 > 0.05$ There's no statistically significant difference in packaging importance between age groups, although there may be a slight trend.

Income - $p = 0.039 < 0.05$Income level significantly affects how important price is when buying processed food. Likely, lower-income respondents rate price as more important.

Variables	Coefficient (β)	Std. Error	z-value	p-value	Odds Ratio (e^β)
Gender (1 = male)	-0.57	0.22	-2.59	0.0097	0.57
Age	0.15	0.08	1.88	0.060	1.16
Education	0.31	0.11	2.82	0.0049	1.36
Income	0.22	0.09	2.44	0.0147	1.25
Trust claims	0.32	0.11	2.91	0.004	1.38
Avoiding artificial	0.45	0.13	3.46	0.001	1.57
Attracted by design	0.18	0.09	1.96	0.050	1.20
Trust govt	0.26	0.12	2.17	0.030	1.30

Gender:
Males are significantly less likely to be influenced by packaging compared to females. (Odds ratio = 0.57)

Education:
More educated consumers are significantly more likely to be influenced by packaging. (Odds ratio = 1.36)

Income:
Higher income increases likelihood of being influenced by packaging. Perhaps these consumers are more exposed to premium packaging strategies.

Age: Not statistically significant at 95% confidence ($p = 0.06$), but there's a marginal trend showing older consumers may be slightly more influenced by packaging.

Packaging strongly influences buyers, especially among females, higher-educated individuals and higher-income groups. Packaging strategy should target educated and affluent consumers and should especially be designed with female shoppers in mind. People who trust packaging claims are more likely to be influenced by packaging. Those who avoid artificial ingredients also rely on packaging as a decision tool. Belief in regulation accuracy slightly increases influence by packaging. Even aesthetic attraction has borderline significance. When we combine educational levels with the trust claims mentioned on packaging, it can be noted that trust is relatively uniform across all educational levels. Higher income groups avoid artificial ingredients more.

Attribute	Demographics tested	F-Value	p-value
Serving size	Income group	1.85	0.14
Front packaging	Educational level	3.12	0.027
Back level nutritional info	Age group	2.66	0.048
Brand & product name	Gender	0.73	0.39
Manufacturing & expiry date	Educational level	1.41	0.24
Price	Income group	4.02	0.008

Front Packaging and Educational Level, the F-value is 3.12 and the p-value is 0.027 which is below 0.05, which indicates there is a significant difference in how different educational groups view or interpret front packaging information. Individuals with different educational levels might differ in their awareness, understanding, or evaluation of the front label, highlighting the importance of tailoring information to various educational backgrounds.

Back Label Nutritional Information and Age Group the F-value is 2.66 and the p-value is 0.048 which is below 0.05, indicating statistical significance. This suggests that age groups have a significant impact on how back label nutritional information is perceived or utilized. Older or younger respondents, for example, may weigh nutritional information differently when making food choices.

Brand and Product Name and Gender the F-value is 0.73 and the p-value is 0.39 which is greater than 0.05, indicating no significant difference in the importance of brand and product name between genders. This suggests that gender does not play a major role in how individuals perceive or value brand and product names in the context of food labelling.

Manufacturing and Expiry Date and Educational Level the F-value is 1.41 and p-value is 0.24 which is greater than 0.05, there is no significant difference in how educational level influences the importance of manufacturing and expiry dates. This suggests that people with varying educational backgrounds place similar levels of importance on these dates, or that they are not as strongly influenced by this information.

Price and Income Group the F-value is 4.02 and the p-value is 0.008 which is below the significance level of 0.05, indicating statistical significance. This means that income group is a significant factor in how individuals perceive or react to food pricing. People from different income groups likely have varying attitudes or behaviours regarding food prices, with those in lower-income groups possibly being more price-sensitive than those in higher income brackets. Price is significantly more important to lower-income groups

Regression for packaging importance

Factors	β Coefficient	p-value
Age	0.12	0.047
Gender (male = 1)	-0.21	0.031
Education	0.18	0.008
Income	0.14	0.042

When comparing the Coefficient & p-value for importance of packaging it can be noted that **Females**, **more educated**, **higher-income**, and **older** respondents tend to rate packaging as more important in their purchasing decisions.

CONCLUSION:

This study throws some light in understanding how different demographic factors affect the purchase decision of processed food products. The overall results do show us that packaging is an important parameter when consumers decide what they should be buying. Certain attributes of packaging like nutritional content and information on the back label are extremely important to the consumers. Some key elements that could be highlighted in this study is that lower-income groups place higher importance on price and higher education levels correlate with more importance given to nutritional information. Females value brand name more in packaging and not statistically significant, but slight trends observed with younger consumers more influenced by front information of the packaging as compared to older people. Consumers who care about price also care about expiry dates and nutritional transparency, indicating a value- and health-conscious cluster.

Based on this study, some details mention along can be considered as recommendations to processed food brands in their future endeavours with strategies that can be utilised to get maximum consumer satisfaction. Elements like price, expiry date, and nutrition info are the most influential attributes. Packaging design and content can be aligned with target demographics for better consumer engagement. Brands targeting lower-income or cost-conscious consumers should clearly highlight price and value. For health-conscious or educated demographics, emphasize nutritional transparency and expiry clarity could turn out to be a win –win situation for brands as well as consumers. Use of brand identity and recognition may work more actively when marketing to female consumers. For majority of the consumers cost of the product and

freshness/shelf life is essential. Nutritional information is crucial for health-conscious consumers, with the majority viewing it as an essential part of their purchasing decision. Strong brand recognition and the product's name are very important for many consumers, suggesting that trust in the brand and the perception of quality are key influences. Front packaging information plays a lesser role in purchase decision also serving size is not as important as price

One of the limitations is the geographical area, as the data was collected from urban area Mumbai, this study can be conducted in other regions concentrating more on semi urban and rural areas.

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