

Research on the Optimization of Food Packaging Strategies

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Abstract:

In today's highly competitive food market, packaging design has become a key factor in brand differentiation and consumer decision-making. This study systematically analyzes the optimization paths of food packaging strategies and their impact on consumer behavior through a literature review approach. The study found that packaging design needs to take into account multiple factors such as color psychology, functionality and environmental sustainability: high saturation colors can quickly attract attention, but may weaken the health perception of the product; Eco-friendly packaging, which is in line with policy and consumer trends, faces cost and technical bottlenecks; Digital interactive design is emerging as a new direction. In addition, the packaging needs to be in harmony with the brand positioning, the consumption scenario and the characteristics of the target group. For example, low-saturation colors are more suitable for healthy food, and Chinese trend elements can effectively evoke emotional resonance among young consumers. Based on the literature analysis, this paper proposes optimization suggestions, emphasizing that packaging design should seek a balance between visual appeal, health image and environmental value, while integrating technological innovation and cultural symbols to enhance brand competitiveness. The study provides a systematic framework for packaging design for food enterprises and lays the foundation for future exploration of intelligent and personalized packaging trends.

Keywords: Food packaging design; Color psychology; Consumer behavior; Sustainable packaging; Brand differentiation.

1. Introduction

The current global food sales market size has ex-

ceeded \$9 trillion, showing a trend of healthy, convenient and sustainable consumption. The demand for low-sugar, low-fat, plant-based foods and func-

tional products has soared. The fast-paced life has driven the popularity of ready-to-eat meals and small packaged snacks, while more than 70 percent of consumers prefer eco-friendly packaging. In this highly competitive market environment, the fragmentation of online and offline channels has made brand differentiation particularly important, and packaging design, as the „first touchpoint“ of the product, has evolved from a mere product protection function to a core tool for brand marketing. Modern food packaging captures consumers' attention within 3 seconds through color psychology and unique shapes, such as green for health, bright colors for children, Coca-Cola's curved bottle and Lay's bright packaging for potato chips are successful examples. In addition, transparent designs such as the „window“ display of salad boxes enhance product trust, while trendy packaging like Yankesi Forest wins emotional resonance among young consumers through cultural symbols. Functional innovation has also become an important direction for packaging design, such as microwave-heated ramen bowls, leak-proof beverage bottle caps, and smart packaging like QR code traceability and temperature-sensing labels, which not only enhance the user experience but also reinforce the brand's sense of technology. With environmental awareness growing, sustainable packaging such as recyclable materials and biodegradable labels has become a new marketing highlight, and companies like Unilever have won consumers' favor through „zero plastic“ promises. In the current context of severe food homogeneity, packaging design not only reflects the external form of the product, but also plays a key role in brand value transmission, consumer decision-making guidance and market competition. In the future, packaging that combines aesthetics, functionality and environmental friendliness will become the core driving force for brands to achieve premium. Based on the method of reading the literature, this article condenses the viewpoints and key points expressed in the literature and then conducts a literature review. This paper uses the method of literature analysis to extract the core viewpoints of existing studies, then conducts a literature review, puts forward optimization suggestions, and finally provides a summary and conclusion.

2. Literature Review

2.1 The Current State of the Food Industry

At present, the food industry is at a critical stage of digital transformation. With the popularization of technologies such as big data and the Internet of Things, digital food has become a new business form in the food industry, driving the industry towards a trend with intelligent, personalized and flexible characteristics [1]. The change in consumer demand is the core driving force of this trans-

formation, with online purchases gradually replacing traditional channels, and enterprises precisely capturing market demand through data analysis and optimizing production decisions. In order to purchase food that suits their taste, more and more consumers are choosing the form of online customization, and this personalized demand is forcing enterprises to upgrade their supply chains and product structures [1].

However, the industry still faces structural challenges. On the one hand, low entry barriers have led to a pattern of small, fragmented businesses and frequent food safety issues [1]. On the other hand, the incoordination between demand and supply has exposed the contradiction between overcapacity and product lag [1]. For instance, some traditional foods have been phased out because they failed to meet health demands, while the emerging „digital foods“ have become new growth points in the market by integrating nutritional characteristics with health data.

2.2 Core Strategies for Market Positioning

2.2.1 Brand positioning and value building

Brand positioning is the primary task of brand management, and its essence is to establish a brand image that is relevant to the target audience [2]. A successful brand takes into account both rational values (such as quality and efficacy) and emotional values (such as cultural identity). For instance, baby Care, which positions itself as caring for mothers, babies and life, has won the trust of consumers through professional and personalized solutions. Babybaby implements strict quality control from raw material procurement to production, and its production environment meets the 100,000-level purification standard [2]. This extreme pursuit of quality makes it the most trusted leader in nutrition and health for mother-baby families.

2.2.2 Policy and regulation drive industry norms

The government needs to address industry chaos through standardized measures for market access and qualification management, such as tightening the market access system to eliminate backward production capacity [3]. At the same time, the „three cuts, one reduction, one supplement“ policy (cutting overcapacity, reducing inventory, deleveraging, reducing costs, and strengthening areas of weakness) promotes supply-side reform to help enterprises optimize their structure. In addition, strengthening market regulation is key to ensuring fair competition and requires „maintaining market order through legislation and law enforcement „[4].

2.2.3 Balance between digital transformation and consumer rights

New business forms require enterprises to integrate data

such as consumer demand and production characteristics to form a comprehensive management model „[5]. But the application of technology should be based on consumer rights. Strengthened regulation is aimed at „reducing merchant fraud „, and the Baby case shows that a brand’s long-term competitiveness stems from the promise that“ every product is safe and reliable „[1,2].

2.3 Trends in the Food Industry

The food industry needs to break through in three aspects: First, technology integration, deepen the application of digital technology, and accelerate the deep integration of the digital economy with the food industry [6]. The second is brand differentiation. Brands need to „establish an image distinct from competitors“[7]. Babybaby achieved a technological barrier through the patent “Model Diagram of Maternal and Infant Demand Development”. The third is policy synergy, where the government and enterprises work together to build a „harmonious market environment“ while protecting the intangible assets of enterprises and the rights and interests of consumers [8]. In summary, the food industry is at the intersection of new business model innovation and traditional model iteration, and only through precise positioning, technology empowerment and regulatory protection can sustainable development be achieved [9].

2.4 Comparison of the Advantages and Disadvantages of Mainstream Packaging Strategies

At present, the food industry mainly adopts three packaging strategies, each with its own characteristics. Visual communication strategies quickly attract consumers’ attention through elements such as color and graphics. The way of visual communication should be concise and clear to achieve the purpose of quickly and accurately conveying key product information to consumers [3,10]. This strategy works well in shelf competition, especially when applying color psychology principles such as the association of red with passion, vitality and festivity [3]. However, over-reliance on visual stimuli can lead to homogenization problems, with designers lacking independent thinking and innovation, which in turn weakens product recognition [3].

Environmentally sustainable strategies conform to the trend of green development, especially the inevitable trend of paper food packaging replacing plastic food packaging [4,8]. Such packaging not only meets policy requirements but also enhances brand image. But there are cost and technical bottlenecks in implementation, overly luxurious food packaging will increase the cost of food production, and the supporting technology is not yet complete [4]. Digital interaction strategies, as an emerging direction, enhance consumer engagement through technologies such

as AR, but their popularity is limited by technical costs and acceptance.

2.5 Key Elements of Product Strategy and the Art of Balancing

A successful product strategy requires balancing in multiple dimensions. Differentiation positioning is an effective way to break through homogeneity by establishing market segments through „unique shape, special material “[5]. But differentiation needs to be measured to avoid market acceptance problems caused by excessive innovation. The functional value-added strategy directly enhances the user experience, and the design of packaging functionality directly affects the user experience of consumers, but cost control should be noted [5].

Emotional resonance strategies, which build deep connections through cultural elements, are highly effective in specific markets. However, cultural interpretation requires accuracy, and misuse can backfire. The best solution lies in a combination of strategies, such as visualizing environmental commitments and achieving multiple goals simultaneously. Future trends suggest packaging will move towards being smarter and more interactive, but the core remains consumer value, and a balance needs to be struck between innovation and practicality, cost and effect.

2.6 The Impact of Food Packaging Color Saturation on Health Perception

2.6.1 The mechanism of action of food packaging color saturation

Color is an important factor influencing consumer perception, consisting of three parts: hue, lightness, and saturation. The mechanism by which color saturation works is to influence consumers’ emotions and cognitive judgments through visual perception. Bright colors (high saturation) make people feel excited and happy, while soft colors (low saturation) make people feel more steady and sophisticated. In food packaging, merchants often use bright colors to attract consumers, but this may also make consumers feel that the food is not healthy enough. This is because people tend to associate highly saturated colors with unhealthy food, forming a fixed impression [7]. Therefore, when designing food packaging, businesses need to strike a balance between visual appeal and health perception, for example, by appropriately lowering color saturation or combining natural elements such as green and brown to convey the impression of health and naturalness, thereby more effectively guiding consumers’ purchasing decisions.

2.6.2 Influence of color saturation on health perception

Consumers are more likely to view food packaged with high saturation as unhealthy, while food packaged with low saturation is perceived as healthier. The effect is not

only because of the color itself, but also because of consumers' expectations of the taste. Bright packaging makes consumers feel that food tastes better, but at the same time they also think that delicious food is often less healthy. This psychological phenomenon is known as the "delicious-unhealthy intuition," where consumers tend to think that the more delicious a food tastes, the less healthy it is.

2.6.3 Differences in consumer responses and marketing advice

Individual differences among consumers can also affect their responses to packaging colors. For example, people with a lower sense of power are more likely to be influenced by packaging color, while those with a higher sense of power are less concerned about these external factors. This finding is helpful for food marketing: low-saturation packaging can be used for health-conscious consumers to enhance the health image of the product. For consumers who are easily attracted by the packaging, additional information such as nutrition labels can be used to guide them to make more rational choices.

2.7 Research on the Application of Color Psychology in Packaging Design

2.7.1 The visual impact of color in packaging design

As the most direct visual element in packaging design, color can quickly attract consumers' attention and convey product information. Research shows that human vision is much more sensitive to color than to form, and about 80% of visual information comes from color perception [6,11]. High-purity colors, such as red and green, are often used in food and eco-friendly product packaging. Red stimulates appetite, while green conveys the idea of health [9]. High grey and cool tones (such as champagne gold, classic black) are often used for high-end goods to create a simple, luxurious brand image. Therefore, color not only serves the basic function of information transmission in packaging design, but also becomes the core medium for brands to establish an emotional connection with consumers and shape the perception of product value, and its scientific application directly affects consumers' purchasing decisions and brand loyalty.

2.7.2 The application mechanism of the psychological effect of color

Different colors have different effects through psychological associations. Warm tones (red, orange, yellow) bring about associations of warmth and appetite and are suitable for food packaging; Cool tones (blue, green, purple) convey a sense of calmness and reliability and are suitable for home or tech products. Colour saturation also affects consumer judgment. High-saturation colours are more attractive but may be considered unhealthy, while low-sat-

uration colours appear more sophisticated and credible. Designers need to choose the right colors for different consumer groups, such as young people preferring bright contrasting colors and high-end consumers preferring understated cool tones.

2.7.3 The commercial value realization path of color design

A successful packaging color design needs to take into account both product characteristics and market demand. Hot red for chili sauce packaging fits the product's characteristics, while cool tones for daily necessities emphasize the concept of environmental protection. Designers should delve into the color preferences of the target consumers and use techniques such as contrast and harmony to enhance the visual impact. At the same time, color choices should be consistent with brand positioning to strengthen consumer memory and identification. Future research could explore the differences in color psychology in different cultural contexts to provide more precise guidance for packaging design in global markets.

3. Conclusions

This study systematically analyzed food packaging design strategies and their market impact and found the following important findings: In terms of packaging design strategies, visual communication strategies can effectively enhance product attractiveness through the principles of color psychology, but excessive reliance on visual stimuli can lead to homogenization problems. Environmental-sustainable strategies, though in line with policy orientation, face cost pressures and technical bottlenecks. Digital interaction, as an emerging direction, has yet to fully unleash its application potential. Research has found that successful packaging design requires finding a balance between visual impact and a healthy image, which requires designers to take into account product features, consumer psychology and market trends. The study has significant implications for industry practice: first, it provides food companies with a systematic decision-making framework for packaging design; Secondly, it reveals the interaction mechanism between consumer perception and packaging design; Finally, it promotes the practical application of sustainable packaging concepts.

Future research could be further explored in the following directions: First, by integrating neuroscience techniques to measure more precisely the mechanisms by which color affects consumer decision-making. Second, examine the differences in packaging design effects in different cultural contexts; Third, develop more economical and environmentally friendly packaging materials and technologies. Research on packaging preferences for emerging consumer groups such as Generation Z is also in urgent

need of strengthening. With the development of digital technology, the application potential of virtual reality and augmented reality in packaging design is worth further exploration. The limitations of this study lie in the limited sample coverage and the lack of adequate consideration of consumer differences in different cultural contexts.

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