

Research on A Dream of Red Mansions-Themed Food Packaging Design Based on Emotional Design Theory

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Abstract. Objective To address the contradiction between the "homogenization of cultural IPs" and the "upgrading of users' emotional needs" in current cultural-themed food packaging, this study takes the A Dream of Red Mansions IP as an example to develop a user emotional demand-centric and data-driven food packaging design method, aiming to enhance the cultural and emotional value of products and user satisfaction. Methods First, user interviews and competitor analysis were conducted to qualitatively explore user needs and the emotional connotation of the IP. Second, the three-level theory of emotional design was integrated with the Kano model to establish a research framework: emotional design theory was applied to decompose needs into design elements, followed by quantitative analysis of user demand attributes through Kano model questionnaires to accurately identify key design points and their priorities. Results A design logic chain and specific design strategies were developed to translate the cultural symbol system of A Dream of Red Mansions into "visual symbols-functional experience-emotional resonance". Conclusion The comprehensive research framework for food packaging design established in this study can scientifically convert the emotional core of classic IPs into implementable design parameters, effectively enhance the emotional experience and market competitiveness of packaging, and offer actionable academic paradigms and practical pathways for the innovative development of similar cultural IP products.

Keywords: Emotional Design, Kano Model, Food Packaging Design, User Demand Analysis, A Dream of Red Mansions

1. Introduction

In recent years, with the rise of Guochao culture and the continuous deepening of consumption upgrading, cultural IP empowerment has become a crucial value growth driver in the food packaging industry. According to the "2024-2029 China Food Gift Industry Market Survey Analysis and Development Prospect Report" released by Zhongyan Puhua Industry Research Institute [1], the market size of China's food gift industry reached 638 billion yuan in 2023, with a year-on-year increase of 13.2%. Among them, cultural theme-based packaging products have achieved remarkable growth, and the market size is expected to exceed 800 billion yuan by 2025. Nevertheless, the industry has gradually exposed dual dilemmas in its rapid development: "homogenization of cultural expression" and "superficialization of emotional experience". On the

one hand, most cultural theme packaging designs remain in the initial stage of symbol transplantation, lacking in-depth exploration of the spiritual core and emotional value of IPs. On the other hand, consumers' expectations for packaging have shifted from basic protective functions to higher-level emotional resonance and cultural identity. The "2024 Food Packaging Consumption Trend Report" [2] points out that more than 65% of consumers are willing to pay a 15%-30% premium for packaging with immersive cultural and emotional experiences, indicating that emotional value has become a key factor driving consumption decisions.

As the pinnacle of Chinese classical literature, *A Dream of Red Mansions* provides a profound cultural foundation and emotional materials for food packaging design, with its rich records of dietary culture (e.g., "braised eggplant with minced meat", "lotus leaf soup"), unique color imagery (e.g., "crabapple red", "pine flower green"), and emotionally charged scene narratives (e.g., "Baochai chasing butterflies", "Xiangyun lying drunk"). However, current related products on the market are mostly confined to the simple application of traditional patterns and character images, failing to systematically establish a deep connection between cultural symbols and emotional experiences. This leads to insufficient product differentiation and inability to meet users' emotional expectations.

In terms of theoretical application, integrated design research methods have become effective approaches to solving complex design problems. Proposed by Donald Norman, the three-level theory of emotional design [3] has been widely applied in the fields of cultural and creative products and experience design, providing a systematic framework for the emotional translation of cultural IPs: the visceral level is associated with visual aesthetics, the behavioral level focuses on user experience, and the reflective level touches upon cultural resonance and emotional memory. As an important tool for quantifying user needs and prioritizing them, the Kano model can effectively distinguish between basic needs, expected needs, and exciting needs, avoiding misallocation of design resources. Currently, some scholars have explored the combined application of theoretical tools: for example, Liu Fuqin et al. [4] integrated the KJ method with the Kano model to improve the completeness of product conceptual design; Sun Meng et al. [5] combined the Kano model with Functional Analysis System Technique (FAST) for function prioritization; Zhou Hongyu et al. [6] realized the conversion of user needs into design parameters through the AHP-FAST-FBS model. However, research on integrating the three-level theory of emotional design with the Kano model for emotional packaging design of classic literary IPs remains insufficient.

Therefore, this study focuses on *A Dream of Red Mansions*, a national-level IP, and proposes an integrated research framework combining the three-level theory of emotional design and the Kano model. Through a combination of qualitative analysis and quantitative measurement, this study systematically explores users' emotional needs, establishes the mapping relationship between IP cultural elements and design factors, and ultimately forms scientific design strategies and methodological pathways. This study not only provides innovative ideas for the food packaging design of *A Dream of Red Mansions* but also offers a systematic and transferable research paradigm for the emotional translation and design practice of cultural IPs.

2. Research methods

2.1. Three-level theory framework of emotional design

This study adopted the three-level theory of emotional design proposed by Donald Norman [1] as the core theoretical framework. This theory systematically divides users' experience of products into

three levels, providing a clear pathway for in-depth exploration and translation of the emotional connotation of the A Dream of Red Mansions IP:

Visceral level design: Focused on users' immediate sensory responses to product appearance. At this level, this study emphasized the aesthetic translation of visual symbols from A Dream of Red Mansions, including extracting unique color systems, traditional patterns, typical imagery, and calligraphic fonts from the text and related works of art. The intuitive visual impact was used to evoke positive emotions in consumers at the first glance.

Behavioral level design: Related to the usability and functionality of products. At this level, this study systematically analyzed the practicality and human-computer interaction rationality of packaging, specifically including the opening and closing structure of gift boxes, the internal packaging and freshness preservation of food, portability, and the clarity of information identification. Excellent behavioral level design should enable users to operate the product effortlessly, thereby establishing trust in product quality.

Reflective level design: The highest pursuit of design, involving cultural resonance, personal memories, and emotional belonging evoked by products. This study conducted in-depth exploration of emotional scenes (e.g., the youthful joy of "Shou Yihong Qunfang Kai Ye Yan" [A Grand Feast of Beauties in Yihong Courtyard]), cultural imagery (e.g., the poetry and life philosophy of "Daiyu Burying Flowers"), and philosophical connotations in A Dream of Red Mansions. Through narrative design, symbolic metaphor, and other methods, the spiritual core of the IP was integrated into the packaging experience to stimulate users' cultural identity and in-depth emotional interaction, forming a lasting emotional connection.

2.2. Kano model analysis method

Proposed by Noriaki Kano [7], the Kano model is an effective tool for classifying and prioritizing demand attributes through two-way positive and negative questioning of user needs (feelings when a certain function is available/unavailable). This study adopted standardized Kano questionnaires and data analysis methods, whose core lies in classifying user needs into the following attribute types:

In demand classification, must-be needs (M) are the basic attributes that products must possess; failure to meet them is likely to cause strong dissatisfaction. Expected needs (O) refer to the needs explicitly expressed by users, and their satisfaction degree has a linear positive correlation with user satisfaction. Attractive needs (A) are those that exceed users' expectations; their realization can significantly improve user satisfaction. Indifferent needs (I) refer to attributes that have no significant impact on user satisfaction whether they are met or not. Reverse needs (R) are attributes that users do not want; forced satisfaction may lead to dissatisfaction instead. These five types of needs together constitute a multi-dimensional understanding framework for product functions and user experience.

Through statistical analysis of questionnaire results, the Better-Worse coefficients of each demand were calculated to scientifically quantify their attribute classification, thereby providing a clear priority basis for design decisions [8].

2.3. Construction and application process of the integrated research framework

This study aimed to construct a systematic design research framework to address the dual challenges of cultural connotation translation and user demand priority determination in the food packaging design themed on A Dream of Red Mansions. Traditional single research methods had obvious limitations: although the three-level theory of emotional design could provide comprehensive

direction guidance for design, it lacked quantitative data support, making it difficult to accurately distinguish the priority of design elements. Although the Kano model could effectively quantify demand attributes, its analysis results, without a systematic design theory as a translation framework, were likely to fall into scattered function accumulation, making it difficult to achieve the emotional sublimation of cultural IPs.

To solve the above problems, this study innovatively integrated the three-level theory of emotional design with the Kano model to construct a hybrid research framework. This framework gave full play to the synergistic advantages of the two: the three-level theory of emotional design was used as qualitative analysis to systematically construct the mapping pathway from cultural IP to design elements; meanwhile, the Kano model was used as a quantitative analysis tool to accurately anchor the priority of each design element. The two together guided the optimization of design decisions.

According to relevant theories, the implementation of this integrated research framework first collected user needs through interviews and other methods, classified them according to the visceral, behavioral, and reflective levels of emotional design to form a structured list. Secondly, a large-scale quantitative survey was conducted using Kano questionnaires to analyze the attribute types of each demand and determine their priority based on Better-Worse coefficients. Finally, comprehensive qualitative and quantitative analysis results were used to formulate targeted design strategies. On the basis of ensuring must-be needs and improving expected needs, efforts were made to integrate attractive needs to achieve efficient allocation of design resources. Figure 1 Integrated Research Framework Based on Emotional Design and Kano Model.

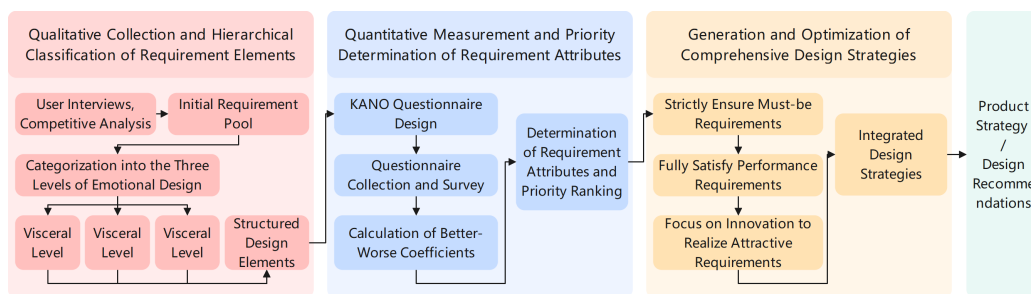


Figure 1. Integrated research framework based on emotional design and the kano model

3. Case study

3.1. Analysis of user characteristics and healing needs

3.1.1. Analysis of user characteristics

The packaging design of A Dream of Red Mansions themed Chinese pastry gift boxes focused on the innovation of cultural products under the trend of Guochao consumption. According to the "2024 Chinese Pastry Consumption Trend Report" and the "Post-95 Guochao Consumption Preference Survey", its core user group showed distinct characteristics: mainly 25-40 years old (accounting for 68%), 72% female, mostly urban white-collar workers with a monthly income of more than 15,000 yuan, and 85% with a bachelor's degree or above. The consumption scenarios were diverse and focused: holiday gifts (Mid-Autumn Festival, Spring Festival) accounted for 45%, business gifts accounted for 25%, personal taste and cultural collection accounted for 20% and 10% respectively. In terms of needs, this group paid attention to the cultural connotation and aesthetic value of packaging, was willing to pay a premium for high-quality and well-designed products, attached

importance to the social sharing value and cultural identity of products, and paid special attention to the uniqueness and scarcity of products.

3.1.2. Competitor analysis

To in-depth analyze the market status and establish design benchmarks, this study selected three representative Chinese-style food gift boxes as competitors and conducted comparative analysis from multiple dimensions such as consumer groups, design style, visual elements, material technology, advantages, and disadvantages, as shown below:

Table 1. Competitive analysis of food packaging design

Brand Analysis Dimension	Forbidden City Food "Forbidden City Mooncakes"	Suzhou Museum "Songhelou"	Zhiweiguan "Jiangnan Pastry Gift Box"
Packaging Effect Picture	Elements of red walls and golden tiles of the Forbidden City	Jiangnan ink painting style	Traditional Jiangnan garden style
			
Consumer Group	Business people aged 35-50	Cultural enthusiasts aged 28-45	Urban white-collar workers aged 25-40
Target Market / Selling Point	Palace culture, high-end gifts	Scholarly elegance, cultural experience	Local characteristics, traditional craftsmanship
Design Style Characteristics	Magnificent and rich in color	Fresh and elegant, profound artistic conception	Gentle and beautiful, regional characteristics
Visual Elements	Royal symbols such as dragon patterns and auspicious clouds	Landscape paintings, calligraphic inscriptions	Garden elements such as flower windows and pavilions
Material and Technology	Metal box, gold stamping technology	Special paper, embossing technology	Paper box, partial UV technology

3.1.3. User demand survey

In the user survey stage, this study adopted a combination of qualitative interviews and quantitative questionnaires to comprehensively obtain user needs. First, semi-structured in-depth interviews were conducted with 12 core target users (half male and half female, all traditional culture enthusiasts) in October 2025, with each interview lasting approximately 40 minutes. The content focused on their purchasing motivation, actual use experience, and cultural perception. On this basis, a large-scale quantitative verification was conducted through the Wenjuanxing platform from October to December 2025. A total of 154 questionnaires were distributed, and 147 were recovered (5 invalid questionnaires with excessively short filling time and 7 invalid questionnaires with contradictory answers to positive and negative questions were excluded), with an effective rate of 95%. The questionnaire samples covered cultural product consumers of different ages, occupations, and income levels. A Likert five-point scale was adopted to systematically investigate users' specific

needs and preferences in terms of packaging appearance, functional experience, and cultural connotation.

3.1.4. Summary of user needs

After preliminary user portrait analysis, competitor analysis, in-depth interviews, and questionnaire surveys, the user needs obtained in this study were systematically summarized as follows:

Table 2. Summary of user needs for food packaging

Serial Number	User Need	Need Description
A ₁	Use classic colors	Adopt representative colors of A Dream of Red Mansions such as crabapple red and pine flower green to create a classical visual atmosphere
A ₂	Integrate traditional patterns	Use traditional Chinese patterns such as window lattices and embroidery to enhance classical visual beauty and cultural recognition
A ₃	Adopt calligraphic fonts	Use calligraphic fonts for product names or poems to enhance artistic sense
A ₄	Use classical character illustrations	Integrate classic character images such as Baochai and Daiyu to enhance theme recognition
A ₅	Stable and easy-to-open gift box structure	The gift box is easy to open and has a stable and durable structure to improve the user experience
A ₆	Reasonable internal packaging	The internal structure is convenient for taking and storing to improve usability
A ₇	Lightweight and portable packaging	The overall packaging is lightweight, easy to carry and transport
A ₈	Clear and readable product information	Information such as ingredients and shelf life is clearly laid out and easy to read, complying with food packaging standards
A ₉	Packaging with scene illustrations and explanations	Attach classic scene illustrations from A Dream of Red Mansions and brief explanations to enhance the cultural experience
A ₁₀	Design with cultural metaphors	Integrate cultural imagery from A Dream of Red Mansions into the packaging design (e.g., "burying flowers" symbolizes life philosophy) to enhance cultural depth and emotional resonance
A ₁₁	Reusable packaging	The packaging can be used as a storage box or for cultural and creative display to improve practicality and environmental value
A ₁₂	Provide QR code audio book function	Scan the QR code to listen to excerpts from A Dream of Red Mansions or related explanations to increase interactive experience

Based on the three-level theory of emotional design, user needs were classified and deepened as follows:

1. Visceral level needs

B1 Visual appeal: Corresponding to A1 (Use classic colors), A2 (Integrate traditional patterns), A3 (Adopt calligraphic fonts), and A4 (Use classical character illustrations) in the table. Create a classical atmosphere through visual elements to enhance initial appeal.

B2 Accuracy of cultural elements: Corresponding to the A Dream of Red Mansions cultural symbols contained in A1~A4 in the table, ensuring the accuracy of cultural communication.

B5 Material texture: Corresponding to the material selection of A5 (Stable and easy-to-open gift box structure) in the table, ensuring structural durability and tactile experience.

2. Behavioral level needs

C3 Convenience of opening: Corresponding to A5 (Stable and easy-to-open gift box structure) in the table, optimizing the gift box opening experience.

C4 Rationality of storage: Corresponding to A6 (Reasonable internal packaging) in the table, improving the convenience of product taking and storage.

C6 Clarity of information: Corresponding to A8 (Clear and readable product information) in the table, complying with food packaging standards and ensuring information readability.

C7 Portability: Corresponding to A7 (Lightweight and portable packaging) in the table, facilitating the transportation and carrying of the packaging.

3. Reflective level needs

D8 Emotional resonance: Corresponding to A9 (Packaging with scene illustrations and explanations) and A10 (Design with cultural metaphors) in the table, evoking users' emotions and thinking through cultural details.

D9 Social and collection value: Corresponding to A11 (Reusable packaging) in the table, improving the social display and long-term collection value of the packaging.

D10 Interactive experience: Corresponding to A12 (Provide QR code audio book function) in the table, enhancing in-depth interaction between users and products through digital functions.

Table 3. Hierarchical summary of user needs for food packaging

Dimension	Need	Need Description
Visceral Level	B1 Visual appeal	A1 (Use classic colors), A2 (Integrate traditional patterns), A3 (Adopt calligraphic fonts), A4 (Use classical character illustrations)
	B2 Accuracy of cultural elements	A1 (Use classic colors), A2 (Integrate traditional patterns), A3 (Adopt calligraphic fonts), A4 (Use classical character illustrations)
	B5 Material texture	A5 (Stable and easy-to-open gift box structure)
Behavioral Level	C3 Convenience of opening	A5 (Stable and easy-to-open gift box structure)
	C4 Rationality of storage	A6 (Reasonable internal packaging)
	C6 Clarity of information	A8 (Clear and readable product information)
	C7 Portability	A7 (Lightweight and portable packaging)
Reflective Level	D8 Emotional resonance	A9 (Packaging with scene illustrations and explanations), A10 (Design with cultural metaphors)
	D9 Social and collection value	A11 (Reusable packaging)
	D10 Interactive experience	A12 (Provide QR code audio book function)

3.2. Demand classification based on the kano model

The collected data were summarized and classified, and then substituted into the calculation formulas of the Satisfaction Index (IS) and Dissatisfaction Index (IDS) respectively. Among them,

IS represents satisfaction, and IDS represents dissatisfaction [9]. The specific calculation steps are as follows.

Table 4. KANO analysis of user needs for food packaging

Serial Number	Function/Service	A	O	M	I	R	Q	Is	Ips	Attribute Classification
1	Reusable packaging	30	30	0	30	10	0	66.67%	-33.33%	Expected Attribute
2	Clear and readable product information	20	40	0	40	0	0	60.00%	-40.00%	Expected Attribute
3	Design with cultural metaphors	40	30	0	30	0	0	70.00%	-30.00%	Attractive Attribute
4	Integrate traditional patterns	50	20	0	30	0	0	70.00%	-20.00%	Attractive Attribute
5	Use classic colors	40	10	0	40	10	0	55.56%	-11.11%	Attractive Attribute
6	Reasonable internal packaging	40	10	20	30	0	0	50.00%	-30.00%	Attractive Attribute
7	Use classical character illustrations	30	30	0	40	0	0	60.00%	-30.00%	Indifferent Attribute
8	Provide QR code audio book function	20	30	0	50	0	0	50.00%	-30.00%	Indifferent Attribute
9	Adopt calligraphic fonts	40	10	0	50	0	0	50.00%	-10.00%	Indifferent Attribute
10	Stable and easy-to-open gift box structure	30	10	20	40	0	0	40.00%	-30.00%	Indifferent Attribute
11	Packaging with scene illustrations and explanations	20	20	10	50	0	0	40.00%	-30.00%	Indifferent Attribute
12	Lightweight packaging	10	20	10	60	0	0	30.00%	-30.00%	Indifferent Attribute

Through Kano questionnaire analysis, user needs could be divided into three types of attributes, and their design priorities and transformation directions were clarified:

Must-be needs (M): Needs such as environmentally friendly and safe materials and information clarity are the basic trust bottom line for users in food packaging. If the materials are not environmentally friendly and safe, it will directly trigger health anxiety and trust collapse; insufficient information clarity will lead to users' vague understanding of key information such as product ingredients and shelf life, violating the safety decision-making logic of food consumption. Therefore, these needs must be regarded as uncompromising basic guarantees. In design, food-grade degradable materials (such as PLA and sugarcane pulp) could be adopted, and high-contrast printing and clear icon labeling (e.g., "recyclable", "no additives") could be used to enhance information readability, ensuring that users can quickly obtain safety information.

Expected needs (O): Needs such as visual appeal, convenience of opening, rationality of storage, and accuracy of cultural elements directly affect users' experience and initial favorability, and are the core lever to improve satisfaction. Visual appeal determines the attention of users on the shelf; convenience of opening and rationality of storage affect the fluency of daily use; accuracy of cultural elements is the core value basis of A Dream of Red Mansions themed packaging. Its absence or distortion will weaken users' perception of cultural connotation. In design transformation, classic imagery from A Dream of Red Mansions (e.g., Daiyu Burying Flowers, Baochai Chasing Butterflies) could be extracted for flat redesign with elegant color matching; the opening structure could adopt user-friendly designs such as tear lines and press-type buckles; the storage level could be designed with foldable and stackable structures to adapt to family storage scenarios; cultural

elements need to be verified with the original text and details of costumes and utensils to avoid symbolic abuse.

Attractive needs (A): Against the background of upgraded cultural consumption, users are no longer satisfied with "usability", but pursue "empathy" and "social currency". These needs are the key to exceeding user expectations and forming brand differentiation. Emotional resonance can strengthen cultural identity; social value and collection value can drive users to take the initiative to share and repurchase; interactive experience can transform cultural connotation from static packaging to dynamic participation. In design, user emotional connection with A Dream of Red Mansions could be evoked through packaging copy (e.g., poems from "Daiyu Chanting Chrysanthemums") and tactile materials (e.g., imitating rice paper texture); for social value, detachable "Twelve Beauties of Red Mansions" blind box-style packaging could be designed to encourage users to collect and share; for collection value, limited edition numbers and gold stamping technology could be adopted to create a collector's version; for interactive experience, AR scanning function could be implanted, allowing users to watch Red Mansions scene animations by scanning the packaging, realizing the experience upgrade of "packaging as media".

Based on the above attribute classification, the allocation of design resources should follow the logic of "ensuring the foundation, optimizing the core, and breaking through differences": first, strictly ensure must-be needs such as environmentally friendly and safe materials and information clarity to build the bottom line of user trust; second, focus on optimizing expected needs such as visual appeal and convenience of opening to improve the core user experience; finally, strive to create attractive needs such as emotional resonance and interactive experience to build product differentiated competitiveness, realizing the upgrade from "meeting needs" to "creating surprises".

4. Conclusion

Through systematic user surveys and scientific analysis methods, this study deeply explored the user demand levels and priorities of A Dream of Red Mansions themed food packaging design. The study found that contemporary consumers' expectations for cultural themed packaging have exceeded simple visual presentation, shifting to deeper emotional experience and cultural resonance.

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