

Designing Sustainable Cultural Heritage Souvenirs: Integrating Semiotics and Consumer Preferences in Huishan Ancient Town

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ABSTRACT

Existing souvenir designs often overlook the integration of cultural symbols with consumer preferences, thereby limiting both cultural transmission and market potential. This study combines cultural semiotics with consumer preference analysis to design cultural heritage souvenirs, focusing on Huishan Ancient Town in Wuxi. A mixed-methods approach was adopted, including qualitative interviews (n=12) and observational extraction of cultural symbols, Kano model analysis (n=389) to identify consumer preferences, and prototype design and evaluation (users n=50, experts n=5). The results identified six major symbols, including the "Afu" clay figurine, confirming that heritage value ($\beta=0.40$) and hedonic value ($\beta=0.28$) are key drivers of purchase intention. The "Huishan Clay Figurine Car Aroma Pendant" prototype integrated the "Afu" symbol with invigorating essential oils, meeting functional needs (M=35.7%) and traditional symbol expectations (O=40.0%), and received high evaluations (expert ratings = 7.9–9.1), although color optimization is needed. This study proposes a "Cultural Symbol–Consumer Preference" framework, extending the systematic application of cultural semiotics in design and enriching the attribute classification of the Kano model in cultural tourism contexts, thereby providing a replicable paradigm for cultural conservation and sustainable tourism development in heritage sites like Huishan Ancient Town.

Keywords: Sustainable Cultural Heritage, Souvenir Design, Consumer Preferences, Semiotics, Huishan Ancient Town, Kano

INTRODUCTION

With globalization and modernization accelerating, the challenge of preserving local cultural heritage while leveraging it for tourism and economic growth has become increasingly urgent (Ursache, 2015). Souvenirs, as physical expressions of culture, help convey local values, enrich visitor experiences, and boost regional economies (Wasela, 2023). Yet, many mass produced souvenirs fail to reflect authentic local culture, limiting consumer interest and cultural sustainability (MO Lian, 2016).

The ancient town of Huishan in Wuxi, China, known for its eight cultures, including the historic Huishan clay figures, temple culture, spring tea culture and garden culture, has great potential for developing souvenirs with cultural connotations. However, current products often lack cultural depth, reducing their appeal to tourists seeking authentic experiences.

This study addresses the gap between cultural authenticity and consumer preferences in souvenir design. It aims to: (1) identify and classify Huishan's representative cultural symbols; (2) analyze consumer preferences using tools like the Kano model; and (3) apply findings to design prototypes that align heritage with market needs.

The research contributes both theoretically and practically - enhancing understanding of cultural symbolism in design, supporting cultural preservation, and offering a scalable framework for heritagebased design applicable to other culturally rich regions.

Research Objectives

1. **Extract and categorize the cultural symbols of Huishan Ancient Town.** Through qualitative methods including literature analysis, field research, and stakeholder interviews this study systematically identifies the tangible and intangible cultural symbols of Huishan Ancient Town, analyzing their historical context, folk beliefs, aesthetic characteristics, and traditional craftsmanship practices to provide a cultural foundation for souvenir design.
2. **Analyze consumer preferences for souvenir design.** Using the Kano model and questionnaire surveys, the study quantifies tourists' demands for cultural authenticity, practicality, and aesthetic appeal, identifies key attributes (such as heritage value and hedonic value) that influence purchase intention, and guides market-oriented design decisions.
3. **Develop and evaluate prototypes that integrate culture and market needs.** Based on the extraction of cultural symbols and analysis of consumer preferences, the study designs souvenir prototypes with Huishan cultural characteristics (e.g., the Huishan Clay Figurine Car Aroma Pendant) and validates their cultural resonance, functionality, and market feasibility through user testing and expert evaluation.

LITERATURE REVIEW

This study focuses on designing tourism souvenirs with cultural heritage value by integrating local cultural symbols with consumer preferences. The following literature review is organized into three sections: cultural heritage and souvenir design, the application of cultural semiotics in design, and consumer preferences in souvenir design. It aims to provide theoretical and methodological support for the souvenir design framework for Huishan Ancient Town and to identify theoretical and practical gaps in existing research.

1. Cultural Heritage and Souvenir Design

Cultural heritage serves as the core of tourism souvenir design, embodying local history, cultural narratives, and collective memory (Graburn, 1983). High-quality souvenirs transform local cultural elements into perceptible experiences for tourists through visual and functional design, thereby enhancing cultural identity and immersion (Swanson & Timothy, 2012). For instance, the intangible cultural heritage of Huishan Ancient Town (such as Huishan clay figurines) and its tangible cultural assets (such as temple architectural patterns) offer a rich foundation for souvenir design. However, studies have noted that the mere replication of cultural symbols or a lack of innovation often undermines the uniqueness and cultural depth of souvenirs (Li & Ryan, 2018). Recent research further emphasizes that souvenir design should creatively transform traditional elements by integrating them with contemporary aesthetics to meet tourists' dual demands for authenticity and practicality (Yujie et al., 2024). These findings suggest that souvenir design should be rooted in cultural heritage and achieve a balance between cultural transmission and market appeal through innovative design, which directly aligns with Research Objective 1 of this study: extracting the cultural symbols of Huishan Ancient Town.

2. Cultural Semiotics and Design

Cultural semiotics provides a theoretical framework for souvenir design by decoding the symbolic systems embedded in local cultures and revealing their historical and social meanings (Eco, 1979). In design practice, the extraction and transformation of cultural symbols should be approached from three dimensions: external representation (form, color, and pattern), internal structure (cultural meaning), and usage context (function and emotional experience) (Chandler, 2022). For example, Li Juan and Chen Xiang (2020) applied semantic, syntactic, and pragmatic analyses to museum cultural symbols, integrating them into product form and functional design to enhance cultural authenticity and user experience. Recent studies have further explored the transformation of intangible cultural symbols, such as Chen Ting (2016), who extracted motifs from artifacts at the National Palace Museum in Taipei and incorporated them with modern materials (such as ceramics and silicone) to design souvenirs that evoke both visual and emotional resonance. These studies demonstrate that the systematic extraction and innovative application of cultural symbols can significantly enhance the cultural value of souvenirs. However, the integration of cultural semiotics with consumer preferences remains insufficiently explored. This

study addresses this gap by employing qualitative methods to extract cultural symbols from Huishan Ancient Town (such as the "Afu" clay figurine) and applying them to souvenir design (corresponding to Research Objectives 1 and 3).

3. Consumer Preferences in Souvenir Design

Consumer preference is a critical factor for the success of souvenir design and is influenced by multiple dimensions, including perceived value, cultural identity, and engagement (Liu et al., 2019). For example, Huang et al. (2025) found that souvenirs with a high load of traditional cultural elements significantly enhance purchase intention through the mediating effects of perceived heritage value and social value. The Kano model, as a tool for analyzing consumer satisfaction, can identify the priority of product attributes such as must-be attributes, performance attributes, and attractive attributes thus helping designers optimize both functionality and user experience (Kano et al., 1984). Recent studies have further validated the applicability of the Kano model in cultural tourism contexts. For instance, Yujie Jiang et al. (2024) employed Kano analysis to identify tourists' preferences for functionality, uniqueness, and cultural storytelling. These studies emphasize that souvenir design must balance cultural authenticity with market practicality to meet the diverse needs of consumers. However, existing research seldom integrates cultural semiotics with consumer preferences to systematically design souvenirs that are both culturally rich and market-oriented. This study addresses this gap by applying the Kano model to analyze the preferences of tourists visiting Huishan Ancient Town (Research Objective 2) and integrating the findings into prototype design (Research Objective 3).

4. Research Questions and Positioning of This Study

In summary, existing literature on cultural heritage, semiotics, and consumer preferences provides theoretical support for souvenir design; however, several research gaps remain to be addressed: (1) A lack of methodological frameworks that systematically integrate cultural semiotics with consumer preferences; (2) Insufficient research on the extraction and application of cultural symbols for specific heritage sites, such as Huishan Ancient Town; (3) Limited studies that employ mixed methods to validate the effectiveness of souvenir designs integrating cultural and market dimensions. This study addresses these gaps by qualitatively extracting Huishan cultural symbols, quantitatively analyzing consumer preferences using the Kano model, and developing and evaluating souvenir prototypes. It proposes an integrated "Cultural Symbol–Consumer Preference" framework, offering new perspectives for the sustainable development and theoretical advancement of cultural heritage souvenir design.

RESEARCH METHODOLOGY

This study adopts a mixed-methods approach to explore local cultural symbols in Huishan Ancient Town, Wuxi, Jiangsu Province, China, and to design and evaluate souvenirs that integrate these symbols with consumer preferences. Drawing on cultural semiotics (Eco, 1979) and user-centered design principles (Stappers, 2021), the study systematically addresses the research objectives: extracting cultural symbols (Objective 1), analyzing consumer preferences (Objective 2), and developing and evaluating souvenir prototypes (Objective 3). Methods include literature analysis, field research, semi-structured interviews, questionnaire surveys, Kano model analysis, and prototype design and evaluation, ensuring both comprehensiveness and practical applicability. The following sections detail the methodological steps, sample selection, and data analysis processes.

1. Qualitative Exploration of Cultural Symbols

To achieve Objective 1, qualitative methods were employed to extract tangible and intangible cultural symbols from Huishan Ancient Town. Through semi-structured interviews and field observations, this study deeply analyzed the historical context, folk beliefs, aesthetic characteristics, and traditional craftsmanship practices associated with local symbols.

Semi-Structured Interviews

Twelve stakeholders were selected using purposive sampling to ensure representativeness, including: three Wuxi cultural research experts (providing historical and cultural background), three intangible cultural heritage inheritors (offering insights into craftsmanship and symbolic meanings), three souvenir vendors (providing market perspectives), and three Huishan Ancient Town management staff (offering tourism context). The sample size was determined based on thematic saturation: after preliminary analysis of ten interviews, new emerging themes diminished, and the twelfth interview confirmed data saturation. Interview questions covered the cultural significance of symbols, craftsmanship, and tourism applications (see Appendix A). Each interview lasted

approximately 60 minutes, recorded and transcribed into text. Interviews adhered to COREQ guidelines to ensure transparency through cross-checking recordings and handwritten notes.

Field Observation

Field observations were conducted during cultural activities (e.g., Spring Festival temple fairs) and at key locations such as Huishan Temple and Jichang Garden. Observations documented visual and material features of architectural decorations (e.g., golden lotus bridge motifs, ancestral hall wood carvings), festival customs, and craftsmanship practices (e.g., clay figurine making). Standardized logs, photography, and video recordings were employed to ensure multidimensional data collection. Observational data were cross-validated with interview data to enhance reliability of symbol extraction.

Qualitative Data Analysis

Interview and observational data were analyzed using NVivo 14 software through thematic coding based on grounded theory methodology, progressing through open coding, axial coding, and selective coding stages. Two researchers independently coded the data, achieving high intercoder reliability (Cohen's Kappa = 0.85–0.91). Key themes such as "Architectural and Landscape Culture," "Religious Pattern Symbols," and "Craftsmanship Culture" were ultimately extracted, providing a foundation for souvenir design (see Tables 1 and 2).

2. Quantitative Analysis of Consumer Needs

To achieve Objective 2, quantitative methods were employed to analyze tourist preferences regarding the cultural authenticity, functionality, and aesthetic appeal of souvenirs. An early-stage user survey and Kano model analysis were conducted to identify key design attributes.

Early User Survey

A questionnaire was developed based on the measurement scales by Huang et al. (2025), evaluating consumer preferences across six dimensions: purchase intention, utilitarian value, hedonic value, social value, heritage value, and cultural identity. It consisted of 18 items measured on a five-point Likert scale (1=strongly disagree, 5=strongly agree). The questionnaire underwent pretesting (n = 20) to improve clarity.

Convenience sampling was used to distribute the survey through the Wenjuanxing platform to tourists visiting Huishan Ancient Town. A total of 232 questionnaires were collected, with 200 valid responses retained after excluding invalid ones. Sample size requirements were determined based on power analysis ($\alpha = 0.05$, power = 0.80, effect size = 0.15), requiring a minimum of 150 responses; thus, 200 responses satisfied statistical requirements.

Data reliability and validity were tested using SPSS 26: Cronbach's Alpha exceeded 0.85, and the KMO measure was greater than 0.80 with Bartlett's test significance $p < 0.001$, confirming the robustness of the measurement scale (see Table 1).

Table 1 Reliability and Validity Testing for the Questionnaire

Construct	Items	Cronbach's Alpha	KMO	Bartlett's Test (p)	AVE	Factor Loadings
Purchase Intention	3	0.870	0.821	<0.001	0.62	0.680.85
Utilitarian Value	3	0.865	0.815	<0.001	0.60	0.660.83
Hedonic Value	3	0.880	0.830	<0.001	0.64	0.700.87
Perceived Social Value	3	0.855	0.810	<0.001	0.58	0.650.82
Perceived Heritage Value	3	0.895	0.845	<0.001	0.67	0.720.90
Cultural Identity	3	0.885	0.835	<0.001	0.65	0.690.88
Overall	18	0.910	0.875	<0.001		

Source: Author (2025)

Cronbach's Alpha (>0.85) confirmed a high level of reliability. The KMO value (>0.80) and the significance of Bartlett's test validated the suitability for factor analysis. AVE (>0.5) and factor loadings (>0.65) supported convergent validity, while the square root of AVE exceeding inter-construct correlations confirmed discriminant validity.

Kano Model Analysis

The Kano model was employed to quantify consumer satisfaction with souvenir attributes and to identify must-be, performance, and attractive attributes (Matzler & Hinterhuber, 1998). Based on the results of the early-stage survey and field interviews, a Kano questionnaire covering 12 attributes was designed (see Table 2), including functional utility (A1), traditional symbols (A7), and historical storytelling (A11).

The questionnaire consisted of paired functional and dysfunctional questions, rated using a five-point scale (A = dislike, E = like). According to Taro Yamane's (1970) formula (with a 5% margin of error and an average monthly tourist population of 80,000 at Huishan Ancient Town), the required sample size was calculated as 398.

In February 2025, a total of 400 questionnaires were distributed on-site at Huishan Ancient Town using random sampling, resulting in 389 valid responses (valid response rate = 97.25%), which satisfied the statistical requirements.

Data were analyzed using Excel and SPSS, with Better-Worse coefficients calculated and chi-square tests conducted ($p < 0.05$) to verify the significance of attribute classifications (see Table 10).

Table 2 Kano Model Attributes

Attribute	Description	Dimension
A1	Has practical functions (e.g., mug, keychain)	Utilitarian Value
A2	Portable and easy to carry	Utilitarian Value
A3	Visually attractive and unique design	Hedonic Value
A4	Evokes joy or happiness when used/displayed	Hedonic Value
A5	Suitable as a gift for friends/family	Perceived Social Value
A6	Enhances cultural image	Perceived Social Value
A7	Incorporates traditional Huishan symbols (e.g., clay figurines, temple motifs)	Perceived Heritage Value
A8	Includes cultural background information (e.g., booklet, label)	Perceived Heritage Value
A9	Reflects local community values and traditions	Cultural Identity
A10	Fosters a sense of connection to Huishan culture	Cultural Identity
A11	Tells a story of Huishan's history or folklore	Perceived Heritage Value
A12	Made of high-quality, durable materials	Additional (Material Quality)

Source: Author (2025)

Each attribute included both functional (positive) and dysfunctional (negative) questions. A five-point Likert scale was used for responses: A = Dislike, B = Acceptable, C = Indifferent, D = Must-be, E = Like (as detailed in Table 2). The questionnaire was pilot-tested with 20 tourists to ensure clarity of the questions.

Questionnaire Distribution and Data Collection

The questionnaire was distributed using a combination of online and offline methods. Online questionnaires were promoted through social media and tourism platforms, while offline questionnaires were collected by trained research assistants at major attractions within Huishan Ancient Town to ensure sample diversity. All participants completed the questionnaire under informed consent, and data were stored anonymously in compliance with ethical standards.

Prototype Design and Evaluation

To achieve Objectives 2 and 3, this study integrated the qualitatively extracted cultural symbols with the quantitatively analyzed consumer preferences to develop a souvenir prototype, which was then validated through user testing and expert evaluation for its cultural resonance and market feasibility.

Prototype Design

Based on the preliminary research, the design process included idea screening, creative development, form summarization, and final selection, ultimately resulting in the "Huishan Clay Figurine Car Aroma Pendant" prototype. The design prioritized high-priority attributes identified through the Kano model (such as A1: functional utility, A7: traditional symbols, and A11: historical storytelling). It incorporated the "Afu" clay figurine symbol, aesthetic elements of Jiangnan culture, and practical functions (e.g., invigorating essential oils).

An iterative design method was adopted, combining sketching, 3D modeling, and sample testing to ensure a balance between cultural authenticity and market demands.

Souvenir Prototype Evaluation

Prototype evaluation employed a mixed-method approach, involving both user testing and expert assessment.

User Testing: Fifty tourists at Huishan Ancient Town were randomly selected to participate. They evaluated the prototype's functionality, aesthetic appeal, and cultural resonance using a five-point Likert scale (1 = very dissatisfied, 5 = very satisfied). The sample size was determined based on the variability observed in the preliminary survey ($SD = 0.7-1.0$), with 50 participants sufficient to detect a moderate effect size (Cohen, 1988). Testing was conducted on-site, where participants interacted with the prototype and subsequently completed a questionnaire.

Expert Evaluation: Five experts specializing in design and cultural heritage (including professors and associate professors, as detailed in Table 3) were invited to assess the prototype using the Delphi method. Experts evaluated the prototype's performance in terms of cultural transmission, design uniqueness, and market feasibility, scoring each dimension on a scale of 1 to 10. The evaluation process included two rounds of anonymous scoring and feedback, ensuring consistency, with a Cronbach's Alpha of 0.87 indicating high reliability.

Table 3 Expert Information for Product Evaluation

Expert	Position	Degree	Area of Expertise
Expert 1	Professor	Ph.D.	Brand Strategy
Expert 2	Professor	Ph.D.	Design Phenomenology
Expert 3	Associate Professor	Ph.D.	Design Psychology
Expert 4	Associate Professor	Ph.D.	Cultural Heritage Preservation
Expert 5	Associate Professor	Ph.D.	Product Design

Source: Author (2024)

The evaluation data were analyzed using SPSS to calculate means, standard deviations, and coefficients of variation, and were combined with qualitative feedback to optimize the prototype design (see Table 12).

DATA ANALYSIS

The evaluation data were analyzed using SPSS to calculate means, standard deviations, and coefficients of variation, and were combined with qualitative feedback to optimize the prototype design (see Table 12).

Data Analysis

Qualitative Data Analysis

Qualitative data (interviews and observations) were thematically coded using NVivo 14, generating themes such as "Architectural and Landscape Culture" and "Craftsmanship Culture" to guide the selection of cultural symbols. Detailed memos were maintained throughout the coding process to ensure traceability.

Quantitative Data Analysis

To evaluate the souvenir prototype, quantitative data collected were analyzed using SPSS and Excel. The main analyses included: Descriptive statistics (e.g., mean, standard deviation) to assess consumer preferences (see Table 6); Multiple regression analysis ($VIF = 1.2-1.8$) to test the predictors of purchase intention (see Table 7); Kano model analysis to calculate the attribute classification proportions and Better-Worse coefficients; Chi-square tests to verify the significance of distribution (see Table 8).

Ethical Considerations

All participants participated voluntarily with informed consent. Interview and survey data were stored anonymously in an encrypted database. Field observations were conducted with respect for Huishan cultural sites, avoiding disruption to local activities. The study adhered to Institutional Review Board (IRB) guidelines, ensuring data privacy and cultural sensitivity.

RESEARCH RESULTS

This section presents the findings from both qualitative and quantitative research, addressing the study objectives: extracting cultural symbols from Huishan Ancient Town (Objective 1), analyzing consumer preferences (Objective 2), and developing and evaluating souvenir prototypes (Objectives 2 and 3). Results are displayed through tables and figures, covering cultural symbol extraction, consumer preference analysis, and prototype evaluation, providing both theoretical and practical foundations for souvenir design.

Extraction of Cultural Symbols (Objective 1)

Interview Results and Grounded Theory Analysis

Through semi-structured interviews ($n=12$) and NVivo coding, using grounded theory methodology, 145 initial concepts were generated and condensed into 15 subcategories, which were further grouped into five

main themes: cultural characteristics, design strategies, market mechanisms, inheritance dilemmas, and communication and education. Coding consistency was high (Cohen’s Kappa = 0.85–0.91).

Table 4 summarizes the cultural themes related to design and their potential applications. For example, the "Craftsmanship Culture" theme includes Huishan clay figurines, symbolizing folk narratives and handcrafted heritage, which can be applied to sculpture or texture designs. The "Architectural and Landscape Culture" theme encompasses temple patterns symbolizing purity and prosperity, suitable for structural motifs or packaging designs.

These extracted themes provide a solid cultural foundation for souvenir design, directly supporting Objective 1.

Table 4 Cultural Themes and Design Implications

Theme	Example Symbols	Cultural Significance	Design Potential
Architectural and Landscape Culture	Temple motifs, bridge carvings	Purity, prosperity	Structural patterns, packaging
Craftsmanship Culture	Clay sculptures, bamboo carvings	Folk narratives, craftsmanship heritage	Sculptures, textured surfaces
Religious Symbolism	Buddhist carvings, scripture pillars	Faith, life cycles	Decorative patterns, storytelling
Everyday Life Culture	Tea ceremonies, festive foods	Zen philosophy, daily life	Functional items, experiential kits
Value System	Clan proverbs, artisan spirit	Morality, inclusiveness	Educational prints, heritage patterns




Source: Author (2024)










Field Observation Results

Field observations collected visual and material data on the architecture, craftsmanship, and festive activities of Huishan Ancient Town through standardized logs, photography, and video recordings. Based on interviews and observational data, six representative cultural symbols were extracted (Table 5), such as the "Afu" Huishan clay figurine (symbolizing family harmony and happiness, applied to a car aroma pendant), ancestral hall wood carvings (reflecting clan ethics, applied to bookmarks), and the intertwined peony motif (embodying religious philosophy, applied to tea sets).

Table 5 details the styles, design suggestions, and cultural characteristics of these symbols, providing creative resources for the subsequent prototype development (Objective 3). These symbols demonstrate the multidimensional features of Jiangnan culture, encompassing themes of clan identity, artistic expression, religious philosophy, and festive traditions, thereby establishing a solid cultural foundation for souvenir design.

Table 5 Representative Cultural Symbols of Huishan Ancient Town, Wuxi (Partial Display)

No.	Cultural Symbol	Typical Style	Design Application Suggestions	Cultural Characteristics
1	Traditional Handicraft: Huishan Clay Figurines	 Da Afu" Clay Figurine (Qianlong Era, Qing Dynasty) Source: Wuxi Museum	 Car aroma pendant, hanging ornaments Source: Author	Representative cultural symbol of Huishan, conveying family harmony and happiness.
2	Traditional Festive Elements			Jiangnan style, associated with warding off evil spirits and blessing rituals.

		 <p>Folk Dragon Boat Festival "Five Poisons" Motif Source: Baidu</p>	<p>Sachet pendants, amulets Source: Taobao</p>	
3	Ancestral Hall Architectural Decoration	 <p>Ridge Decoration: Mythical Beast "Chiwen" Source: Author</p>	 <p>Refrigerator magnets, bookmarks Source: Xiaohongshu</p>	<p>Reflects clan honor and ethical values, symbolizing nobility and auspiciousness.</p>
4	Religious Architectural Decoration	 <p>Intertwined Peony Motif Source: Author</p>	 <p>Fans, scarves, tea sets Source: Author</p>	<p>Carries religious philosophy such as reincarnation and the cycle of life; strong regional identity.</p>
5	Traditional Handicraft	 <p>Jiuqing Bamboo Carving Works Source: Baidu</p>	 <p>Bamboo carving souvenirs Source: Xiaohongshu</p>	<p>Demonstrates exquisite craftsmanship and distinctive Jiangnan aesthetics.</p>
6	Architectural Decorative Patterns	 <p>Ancestral Hall Door and Window Wood Carvings Source: Author</p>	 <p>Paper fragrance decorations, perfume packaging Source: Author</p>	<p>Conveys Jiangnan culture and the vision of a beautiful life.</p>

Source: Researcher (2024)

Note: This table summarizes six representative cultural symbols extracted from Huishan Ancient Town based on field observation and stakeholder interviews. Each symbol is linked to its typical style, proposed design applications,

and corresponding cultural significance. Sources indicate where original visual materials were obtained. These symbols serve as creative foundations for the subsequent prototype design.

Consumer Preference Analysis Results (Objective 2)

Early Survey Findings

The early-stage questionnaire (n=200), based on the scale developed by Huang et al. (2025), assessed consumer preferences across six dimensions. Figure 1 summarizes the mean scores and standard deviations for each dimension. The results show that perceived heritage value (M=4.50, SD=0.76) and cultural identity (M=4.35, SD=0.81) received the highest scores, indicating that tourists place strong importance on cultural authenticity and historical connection.

Hedonic value (M=4.25, SD=0.83) and purchase intention (M=4.20, SD=0.85) followed, reflecting the influence of aesthetic and emotional appeal. In contrast, utilitarian value (M=4.05, SD=0.90) and social value (M=3.88, SD=0.93) scored relatively lower, suggesting that practicality and social status are secondary considerations (see Table 6 for details).

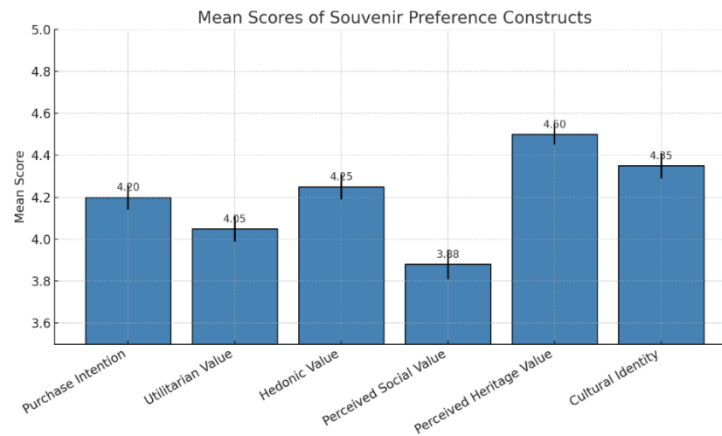


Figure 1 Mean Scores of Cultural Souvenir Preference Constructs
Source: Researcher (2024)

Figure 1 visually demonstrates that perceived heritage value (M = 4.50) and cultural identity (M = 4.35) are the primary driving factors, with standard deviations ranging from 0.75 to 0.95, indicating a high level of consistency in preferences. Following these are hedonic value (M = 4.25), purchase intention (M = 4.20), utilitarian value (M = 4.05), and perceived social value (M = 3.88). These results provide a foundation for the design of attributes in the Kano model, with priority given to heritage value attributes (A7, A8, A11) and hedonic value (A4).

Table 6 Survey Results for Cultural Souvenir Preferences (N = 200)

Construct/Item	Description	Mean	SD
Purchase Intention			
PI1	Likely to purchase after learning cultural background	4.25	0.82
PI2	Willing to pay reasonable price	4.18	0.85
PI3	Consider buying as gifts	4.17	0.87
Utilitarian Value			
UV1	Meets daily needs (e.g., decoration, use)	4.02	0.90
UV2	Convenient for carrying/using	4.08	0.88
UV3	Durable and long-lasting	4.05	0.92
Hedonic Value			
HV1	Purchasing feels delightful	4.20	0.85
HV2	Reminds of Huishan’s cultural experience	4.30	0.80
HV3	Enjoy aesthetic appeal	4.25	0.83
Perceived Social Value			
PSV1	Enhances culturally refined image	3.85	0.95
PSV2	Allows sharing cultural stories	3.92	0.90
PSV3	Proud to display in social settings	3.88	0.93
Perceived Heritage Value			
PHV1	Helps preserve history/craftsmanship	4.52	0.75

PHV2	Feels connected to cultural legacy	4.48	0.78
PHV3	Reflects traditional artisanship	4.50	0.76
Cultural Identity			
CI1	Willing to learn cultural background	4.38	0.80
CI2	Strong sense of belonging to Huishan culture	4.32	0.82
CI3	Cultural symbols resonate with personal values	4.35	0.81

Source: Author (2024)

Regression Analysis

Multiple regression analysis (Table 7) was conducted to examine the predictors of purchase intention, controlling for demographic variables (such as gender and age). The model demonstrated a good fit ($R^2 = 0.52$, adjusted $R^2 = 0.50$, $F(8, 191) = 26.7$, $p < 0.001$), and the variance inflation factors ($VIF = 1.2-1.8$) confirmed the absence of multicollinearity.

The results showed that perceived heritage value ($\beta = 0.40$, $p < 0.001$) and hedonic value ($\beta = 0.28$, $p < 0.001$) were significant predictors of purchase intention. Cultural identity ($\beta = 0.12$, $p = 0.017$) and utilitarian value ($\beta = 0.15$, $p = 0.005$) were also significant but to a lesser extent, while social value ($\beta = 0.08$, $p = 0.111$) was not a significant predictor.

Table 7 Regression Analysis Results (Dependent Variable: Purchase Intention)

Predictor	β	SE	t	p	VIF
Utilitarian Value	0.15	0.05	2.82	0.005	1.4
Hedonic Value	0.28	0.06	4.67	<0.001	1.6
Perceived Social Value	0.08	0.05	1.60	0.111	1.3
Perceived Heritage Value	0.40	0.06	6.67	<0.001	1.8
Cultural Identity	0.12	0.05	2.40	0.017	1.7

Source: Author (2024)

Note: β =standardized regression coefficient; SE = standard error; t = t-value; p = p-value; VIF = variance inflation factor. Dependent variable: Purchase Intention. p values less than 0.05 indicate statistically significant predictors. The variance inflation factors (VIF) are all below 2, indicating no multicollinearity issues among predictors.

The regression results confirmed that perceived heritage value ($\beta=0.40$, $p<0.001$) and hedonic value ($\beta=0.28$, $p<0.001$) are the primary drivers of purchase intention, informing the prioritization of attributes in the Kano model (e.g., A7: traditional symbols, A4: brings pleasure).

Kano Model Analysis Results

The Kano model analysis ($n = 389$) was conducted based on 12 attributes (Table 8), classifying them into must-be attributes (M), one-dimensional attributes (O), attractive attributes (A), and indifferent attributes (I). Table 9 summarizes the attribute classifications and the Better-Worse coefficients.

For example, A1 (functional utility, M = 35.7%) and A12 (high-quality materials, M = 35.0%) were categorized as must-be attributes, meaning their absence would lead to dissatisfaction. A3 (unique design, O = 45.0%), A7 (traditional symbols, O = 40.0%), and A11 (historical storytelling, O = 40.0%) were identified as one-dimensional attributes, where satisfaction is proportional to the level of feature fulfillment. A4 (brings pleasure, A = 30.0%) was categorized as an attractive attribute, capable of significantly enhancing satisfaction if provided. A6 (enhancement of cultural image, I = 35.0%) was found to have a relatively minor impact.

The Better-Worse coefficients further quantified the influence of each attribute on satisfaction and dissatisfaction, as illustrated in Figure 2.

Table 8 Kano Model Attributes

Attribute	Description	Dimension
A1	Has practical functions (e.g., mug, keychain)	Utilitarian Value
A2	Portable and easy to carry	Utilitarian Value
A3	Visually attractive and unique design	Hedonic Value
A4	Evokes joy or happiness when used/displayed	Hedonic Value
A5	Suitable as a gift for friends/family	Perceived Social Value
A6	Enhances cultural image	Perceived Social Value
A7	Incorporates traditional Huishan symbols (e.g., clay figurines, temple motifs)	Perceived Heritage Value
A8	Includes cultural background information (e.g., booklet, label)	Perceived Heritage Value
A9	Reflects local community values and traditions	Cultural Identity

A10	Fosters a sense of connection to Huishan culture	Cultural Identity
A11	Tells a story of Huishan’s history or folklore	Perceived Heritage Value
A12	Made of high-quality, durable materials	Additional (Material Quality)

Source: Author (2024)

Each attribute included both a functional (positive) and a dysfunctional (negative) question. A five-point Likert scale was used for responses: A = Dislike, B = Acceptable, C = Indifferent, D = Must-be, E = Like (as detailed in Table 2). The questionnaire was pilot-tested with 20 tourists to ensure the clarity of the questions.

Table 9 Kano Model Analysis Results Summary (Percentage %)

Attribute	M(%)	O(%)	A(%)	I(%)	R(%)	Q(%)	Category	Better	Worse
A1	35.7	30.8	15.4	10.3	7.7	0	M	0.511	-0.665
A2	25.0	40.0	20.0	10.0	5.0	0	O	0.600	-0.650
A3	20.0	45.0	25.0	7.5	2.5	0	O	0.700	-0.650
A4	15.0	35.0	30.0	15.0	5.0	0	A	0.650	0.500
A5	25.0	30.0	20.0	20.0	5.0	0	O	0.500	-0.550
A6	20.0	25.0	15.0	35.0	5.0	0	I	0.400	-0.450
A7	35.0	40.0	15.0	7.5	2.5	0	O	0.550	0.750
A8	30.0	35.0	20.0	10.0	5.0	0	O	0.550	-0.650
A9	25.0	40.0	20.0	10.0	5.0	0	O	0.600	-0.650
A10	20.0	35.0	25.0	15.0	5.0	0	O	0.600	-0.550
A11	30.0	40.0	20.0	7.5	2.5	0	O	0.600	-0.700
A12	35.0	30.0	15.0	15.0	5.0	0	M	0.450	-0.650

Source: Author (2025)

Note: M = Must-be attribute; O = One-dimensional attribute; A = Attractive attribute; I = Indifferent attribute; R = Reverse attribute; Q = Questionable attribute. Classification is determined based on the highest percentage. Better = $(A + O) / N$; Worse = $-(M + O) / N$.

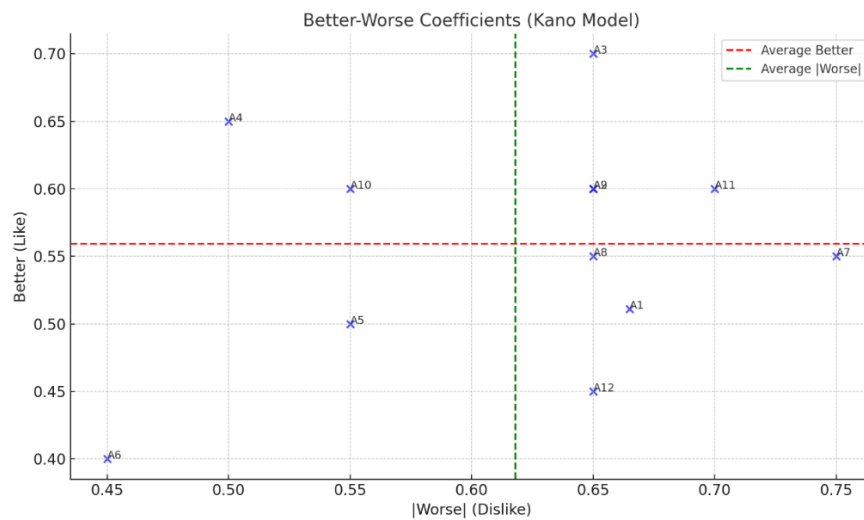


Figure 2 Better-Worse Coefficient Scatter Plot

Source: Author (2025)

Figure 2 shows that A3, A7, and A11 (unique design, traditional symbols, and historical storytelling) exhibit both high Better and high Worse values, indicating that they should be the focus of optimization. A4 (brings pleasure) displays a high Better value and a low Worse value, suggesting it as a target for innovative breakthroughs. A1 and A12 (functional utility and high-quality materials) show low Better and high Worse values, meaning they must be ensured to avoid dissatisfaction. A6 (enhancement of cultural image) demonstrates low Better and low Worse values, indicating the lowest priority. The chi-square test ($\chi^2 = 147.6$, $p < 0.001$) confirmed the significance of the classification distribution, ensuring the reliability of the data. These findings guided the prototype design, prioritizing the integration of A3, A7, and A11.

Prototype Design and Evaluation (Objectives 2 and 3)

Based on the extracted cultural symbols (Table 5) and consumer preferences (Table 9), the "Huishan Clay Figurine Car Aroma Pendant" prototype was developed. The design incorporated the "Afu" symbol

(heritage value), invigorating essential oils (functional utility), and auspicious phrases (hedonic value). The design process included idea screening (based on interview frequency > 20% and Kano attributes classified as O/A > 30%), creative development (simplifying the "Afu" form and optimizing colors), form summarization, and final selection (using eco-friendly cotton paper and letterpress printing). As confirmed in Table 10, the prototype fulfilled key attributes: A1, A3, A7, A11, A12, and A4, ensuring the integration of cultural elements with market demands.

Prototype Design Development

The design development followed four steps to translate research findings into a practical souvenir prototype:

Idea Screening

Based on the results from interviews, field research, and Kano model analysis, three representative cultural symbols were shortlisted: "Afu" Clay Figurine, Intertwined Peony Motif, and Architectural Decorations (e.g., wood carvings, roof tiles). Using three selection criteria - cultural relevance (interview frequency > 20%), consumer preference (Kano attributes classified as O/A > 30%), and feasibility (material cost and technical difficulty) - the final souvenir concept was selected: the Huishan Clay Figurine Car Aroma Pendant Gift Set. Detailed adaptation information is provided in the corresponding table.

Table 10 Adaptation Details of the Huishan Clay Figurine Car Aroma Pendant

Attribute	Kano Attribute	Description	Kano Category	Satisfied
A1	Functional Utility	Invigorating essential oils to alleviate driver fatigue	Must-Be Attribute (M)	Yes
A12	High-Quality Materials	0.8–0.9 mm thick premium cotton paper, letterpress printed; eco-friendly and recyclable		Yes
A3	Unique Design	Innovative design based on the traditional clay figurine, incorporating blessing culture	One-Dimensional Attribute (O)	Yes
A7	Traditional Symbol	Symbolic image of "Afu" from Huishan Clay Figurines		Yes
A11	Historical Storytelling	Folklore about Huishan clay figurines warding off evil and bringing blessings		Yes
A4	Brings Pleasure	Auspicious phrases and invigorating fragrance create joy and enhance user mood	Attractive Attribute (A)	Yes

Source: Author (2025)

Integrating the attribute positioning of the Kano model, this product establishes a multidimensional user value system through the synergistic innovation of functionality, materials, and cultural elements.

At the core functional level, invigorating essential oil directly addresses fatigue pain point in driving scenarios, providing fundamental usability assurance. The 0.8–0.9 mm eco-friendly cotton paper and letterpress printing technique enhance quality experience through tactile perception.

At the design innovation level, the prototype reinterprets the "Afu" figure from Huishan clay figurines, revitalizing regional cultural heritage by merging traditional blessing culture with modern design language.

At the emotional value level, historical storytelling and auspicious phrases serve as cultural memory anchors, while the multisensory stimulation from the essential oil fragrance creates a closed loop of pleasurable experiences beyond basic functionality.

The findings demonstrate that the product successfully integrates a three-layered value structure: the physical functional layer (anti-fatigue), the cultural symbol layer (intangible cultural heritage IP), and the emotional interaction layer (pleasure). It simultaneously satisfies basic user needs and, through cultural empowerment, endows the product with a differentiated competitive advantage. This validates the effectiveness of integrating functional practicality with cultural narrativity as a design strategy for enhancing user experience.

Creative Development

Product Graphic Design: The "Da Afu" figure from Huishan clay figurines, as a representative example of folk art in Jiangnan's Huishan Ancient Town in Wuxi, constructs a complete symbolic system through its stylized elements. This system deeply reflects the integration of traditional folk beliefs and aesthetic values. The specific forms and symbolic meanings of each design element are detailed in Table 11.

Table 11 Traditional Huishan Clay Figurine Elements and Their Symbolic Meanings

No.	Element	Form Description	Symbolic Meaning
1	Overall Shape	Full, rounded form	Symbolizes wealth and auspiciousness
2	Hairstyle	Ancient child's topknot	Symbolizes abundant blessings and fertility
3	Face Shape	Plump and broad cheeks	Symbolizes generosity and prosperity
4	Eyes	Slightly squinting, smiling eyes	Symbolizes peace and compassion
5	Ears	Large earlobes	Symbolizes fortune and longevity
6	Mouth	Slightly upturned corners without showing teeth	Symbolizes warding off evil and inviting good fortune with kindness
7	Sitting Posture	Cross-legged with a stable center of gravity	Symbolizes guarding the household and repelling evil spirits

Source: Author (2025)

The primary visual graphic of the Huishan Clay Figurine Car Aroma Pendant product adopts the classic "Da Afu" figure from Huishan clay figurines as the main visual element. The main graphic integrates contemporary young consumers' preferences by simplifying and stylizing the traditional image, as illustrated in Figure 3.

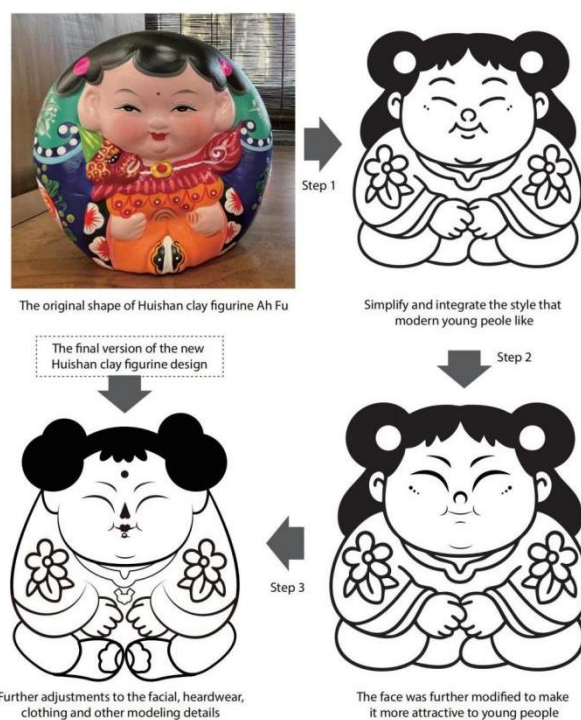


Figure 3 The design process of the new shape of Huishan clay figurines

Source: Author (2025)

The new main visual image is derived from the traditional form but incorporates contemporary aesthetic preferences of young consumers. While retaining the essence of the original figure, each element of the character has been significantly simplified, and a playful expression has been integrated into the new design. The overall appearance continues to convey the lively, adorable, playful, and endearing qualities characteristic of a healthy child.

Product Color Design: The color painting of the Huishan clay figurine "Da Afu" plays a critical role. Huishan clay figurine master Wang Nanxian once described it as "thirty percent sculpting and seventy percent painting," meaning that in the making of Huishan clay figurines, the shaping process accounts for 30%, while the quality of the color painting determines 70% of the final outcome. Thus, painting is highly emphasized by clay figurine artisans.

In early Huishan clay figurines, red, yellow, and blue were predominantly used as primary colors. Deep blue was often chosen as the main color for clothing, accented with green, red, and yellow. Color matching was carefully considered, typically combining contrasting color pairs such as red and green, red and yellow, and yellow and purple. A detailed analysis of the traditional color usage is illustrated in Figure 4.

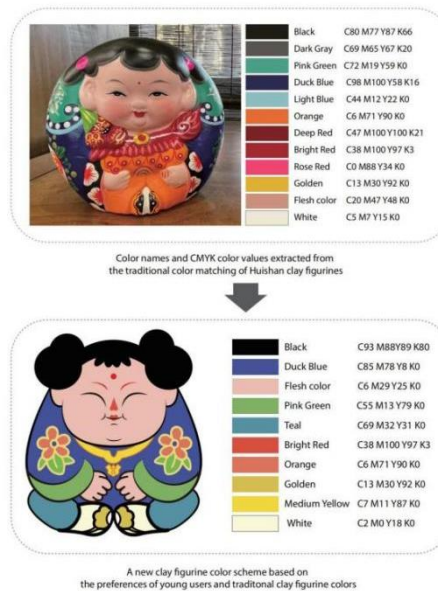


Figure 4 Color Extraction Values and Matching Process Diagram for the New Huishan Clay Figurine Image
Source: Author (2025)

The color scheme of the newly created Huishan clay figurine image is largely derived from the traditional color system. To better align with the aesthetic preferences of contemporary young consumers, the original colors were simplified, with adjustments made to lower brightness and saturation levels. Harmonious analogous tones were applied to make the palette more appealing to modern tastes. Three different color schemes were designed based on gender preferences and usage scenarios, enhancing the product's adaptability. The specific color matching plans are shown in Figure 5.

Product Application Display: To address users' desire for safety while driving, the product incorporates three auspicious phrases: "Have a safe journey with A Fu", "With A Fu near, Good winds steer", "A Fu's grace, your safest place". These phrases are intended to evoke a sense of joy and reassurance during use. The specific application designs are illustrated in Figure 5.



Figure 5 Color Schemes and Auspicious Phrase Illustrations for the Huishan Clay Figurine Car Aroma Pendant
Source: Author (2025)

Form Summarization

The design of the Huishan Clay Figurine Car Aroma Pendant integrated cultural symbols (Objective 1) and consumer preferences (Objective 2), achieving cultural-market integration through four phases: idea screening, creative development, form summarization, and final selection. Idea Screening based on interviews (frequency > 20%), Kano attributes (O/A > 30%), and feasibility, the "Afu" symbol was selected for the development of the car aroma pendant (see Table 10). Creative Development optimizations included graphic refinement (simplification of the "Afu" figure while preserving auspicious symbolism, see Figure 3), color adjustment (soft analogous tones of red and yellow, see Figure 4), and product applications (auspicious phrases combined with invigorating essential oils, targeting A11, O = 40.0%). Form Summation 3D modeling and sample testing verified the functionality (A1, M = 35.7%), cultural value (A7, O = 40.0%), and emotional appeal (A4, A = 30.0%), forming a comprehensive value system across practical (anti-fatigue), cultural (intangible heritage IP), and emotional (pleasurable experience) dimensions. Table 10 confirms that the

prototype satisfies six key Kano attributes (A1, A3, A4, A7, A11, A12), providing a strong basis for final product selection.

Final Selection

The final selection of 1.6–2.0 mm eco-friendly cotton paper combined with CMYK printing was based on the following considerations:

1. **Cultural-Material Compatibility:** The warm texture of cotton paper and the three-dimensional quality of letterpress printing enhance cultural storytelling (A3, O = 45.0%; A7, O = 40.0%; A11, O = 40.0%).
2. **Consumer Preference Satisfaction:** High-quality material (A12, M = 35.0%) achieved high evaluation scores (expert mean = 9.1, tourist mean = 4.5; see Table 12), providing a premium tactile experience.
3. **Environmental Sustainability:** Eco-friendly cotton paper is recyclable and cost-effective (approximately 30% cheaper than ceramics), while letterpress printing allows efficient production (3–5 days per batch).
4. **Technical Requirements:** Cotton paper proved durable (fragrance lasting approximately 30 days), and CNYK printing accommodated fine detail reproduction.
 - i. Sample testing optimized material thickness (from 0.8 mm to 1.6–2.0 mm) and printing pressure. Tourist feedback (mean = 4.0) indicated a need for greater color variation. The final prototype successfully integrated functional, cultural, and emotional values, validating the effectiveness of the design strategy.

Prototype Evaluation

Prototype evaluation was conducted through user testing (n = 50) and expert evaluation (n = 5). Table 12 summarizes the results, showing that material and craftsmanship (expert mean = 9.1, tourist mean = 4.5) and cultural storytelling (expert mean = 9.1, tourist mean = 4.3) achieved the highest scores, reflecting strong cultural value and artisanal quality. In contrast, color application (expert mean = 7.9, tourist mean = 4.0) and functionality (expert mean = 7.9, tourist mean = 4.0) were identified as areas needing improvement. Expert scoring consistency was high (Cronbach's Alpha = 0.87), and the standard deviation in tourist scores (0.7–1.0) indicated diverse feedback.

Table 12 Evaluation Results of the Huishan Clay Figurine Car Aroma Pendant (Experts n=5; Tourists n=50)

No.	Dimension	Mean (Experts)	SD (Experts)	Mean (Tourists)	SD (Tourists)	Satisfaction Level
1	Form Design	8.5	0.35	4.2	0.8	Satisfied
2	Color Application	7.9	0.35	4.0	0.9	Satisfied
3	Material and Craftsmanship	9.1	0.22	4.5	0.7	Very Satisfied
4	Functionality	7.9	0.42	4.0	1.0	Satisfied
5	Cultural Storytelling	9.1	0.22	4.3	0.8	Very Satisfied

Source: Author (2025)

Note: SD = Standard Deviation. Satisfaction levels are based on mean scores: 4.5–5.0 = "Very Satisfied", 4.0–4.49 = "Satisfied".

The evaluation results confirmed the prototype's strengths in cultural resonance (through the "Afu" symbol and historical storytelling) and craftsmanship quality (through the use of eco-friendly materials), aligning with Objective 3. The relatively lower scores for color application and functionality indicate areas for improvement, such as enriching color variations and enhancing the longevity of the fragrance, providing clear directions for future optimization.

Summary of Results

The research findings comprehensively addressed the three objectives:

- **Objective 1:** Six representative cultural symbols were extracted (e.g., "Afu" figurine, intertwined peony motif), reflecting the multidimensional characteristics of Jiangnan culture and providing creative resources for design.
- **Objective 2:** Heritage value ($\beta = 0.40$) and hedonic value ($\beta = 0.28$) were identified as the main drivers of purchase intention. The Kano model analysis highlighted A3 (unique design), A7 (traditional symbols), and A11 (historical storytelling) as priority areas for optimization.

- **Objective 3:** The "Huishan Clay Figurine Car Aroma Pendant" prototype was developed and evaluated, demonstrating strong cultural resonance (tourist mean = 4.3) and market potential (expert mean = 7.9–9.1), although improvements are needed in color application and functionality. These findings provide empirical support for cultural heritage souvenir design, indicating that integrating cultural symbols with consumer preferences can achieve a balance between cultural transmission and market appeal, thereby laying the foundation for the subsequent discussion in Section 6.

DISCUSSION

This study successfully identified and categorized key cultural symbols of Huishan Ancient Town, such as the "Afu" clay figurine, temple patterns, and architectural elements (e.g., wood carvings and roof tile motifs), through qualitative methods, including stakeholder interviews (n = 12) and field observations. These findings align with the principles of cultural semiotics (Eco, 1976), which emphasize the importance of interpreting symbols within their cultural and historical contexts.

The integration of the "Afu" figurine into the car aroma pendant prototype demonstrates how souvenirs can serve as cultural mediators (Graburn, 1983), simultaneously preserving cultural heritage and resonating with contemporary consumers. The adaptation of traditional symbols through simplification and modern design - such as the rounded form and vibrant colors—further ensures usability and aesthetic appeal, addressing the challenge of balancing authenticity with modernity as highlighted by Li and Ryan (2018).

The Kano model analysis particularly emphasized "Unique Design" (A3), "Traditional Symbols" (A7), and "Historical Storytelling" (A11) as key one-dimensional attributes for the Huishan Clay Figurine Car Aroma Pendant, consistent with previous literature emphasizing the importance of local cultural elements in influencing purchase intention (Huang et al., 2025). Moreover, "Material and Craftsmanship" and "Cultural Storytelling" performed exceptionally well in the prototype evaluation, highlighting the central role of traditional craftsmanship and cultural narrative in enhancing consumer purchase intentions. This finding further validates the assertion by Li and Ryan (2018) that balancing cultural authenticity with modern market demands is crucial to successful souvenir design.

However, the study also identified relatively lower scores in "Functionality" and "Color Application," revealing areas where further optimization is needed to improve the functional experience and visual presentation of the souvenir to better align with the preferences of younger consumers. This expands upon existing literature, which often overly emphasizes cultural symbolism and historical narratives while overlooking product usability, suggesting that future designs must achieve a more refined balance between practical functionality and aesthetic expression.

CONCLUSION

Through an in-depth exploration of the cultural symbols of Huishan Ancient Town and a systematic analysis of consumer preferences, this study successfully designed and validated a car aroma souvenir prototype centered on the Huishan clay figurine. The findings confirm that souvenirs integrating cultural authenticity, visual aesthetics, and functional practicality are more favorably received by consumers and possess stronger market competitiveness. This provides an effective reference path for the design of cultural and creative products in other cultural heritage sites or tourist attractions.

At the same time, this study contributes to both theory and practice: Theoretically, it enriches the application framework of cultural semiotics and consumer preference analysis in souvenir design. Practically, it offers a concrete operational model for local cultural heritage preservation and economic development, highlighting the value of cultural and creative design in revitalizing and promoting cultural heritage.

FUTURE RESEARCH DIRECTIONS

Future research can further explore the following areas:

1. Expanding the Research Sample: Broaden the sample to include consumers of different age groups and cultural backgrounds to further validate the applicability and universality of the souvenir design strategies.

2. Utilizing Emerging Digital Technologies: Apply technologies such as augmented reality (AR) and virtual reality (VR) to enhance cultural interaction experiences and evaluate how digital innovation can improve the cultural communication effect and market value of tourism souvenirs.
3. Exploring Lifecycle Management and Sustainable Design: Investigate strategies for sustainable souvenir development by adopting eco-friendly materials and circular economy principles, promoting the green development of cultural heritage souvenirs.
4. Strengthening Collaboration with Intangible Cultural Heritage Inheritors and Local Artisans: Deepen research into the innovative transformation and application of traditional craftsmanship in modern design, advancing the protection and transmission of intangible cultural heritage.

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