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## A creative model for integrating the identity of Dalian Chinese painting into cultural product design

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### Abstract

This study aims to develop and validate a creative model that integrates the identity of Dalian Chinese painting into cultural product design, focusing on embedding local artistic characteristics into modern innovation. A mixed-methods design was applied across three phases: (1) extraction of artistic identity through a literature review, visual analysis, and expert interviews; (2) integration into product design via co-creation workshops; and (3) validation using surveys from 100 consumers and 10 experts to assess cultural value, innovation, and market appeal. The results revealed that the prototypes successfully embodied Dalian's maritime symbolism, oceanic colours, and hybrid brushwork, achieving high ratings in Cultural Identity ( $M = 4.52$ ), Aesthetic Innovation ( $M = 4.38$ ), and Market Appeal ( $M = 4.32$ ). This study confirms that artistic heritage can be systematically integrated into design innovation through a structured creative model, thereby enhancing both theoretical understanding and practical outcomes of the design process. Designers and cultural enterprises can apply this model to develop culturally distinctive products that enhance regional branding and contribute to the growth of sustainable creative industries.

**Keywords:** Artistic identity, Creative model, Cultural branding, Cultural product design, Dalian Chinese painting.

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**Transparency:** The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

**Institutional Review Board Statement:** This study was conducted in accordance with the international ethical standards. All participants provided informed consent before participating in the interviews, workshops, and surveys. Participation was voluntary, and all data were kept confidential and used only for academic purposes. This study posed no physical or psychological risks and did not require Institutional Review Board (IRB) approval under local regulations.

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## 1. Introduction

The convergence of cultural heritage and design innovation has become a crucial research frontier in today's creative industries, reflecting a growing interest in how Indigenous artistic traditions can be revitalised and embedded into contemporary product design. Within this context, Dalian Chinese painting, distinguished by its maritime aesthetics, regional symbolism, and hybrid brushwork, embodies a unique cultural identity that offers both artistic and commercial potential. However, despite its historical and aesthetic significance, systematic integration into cultural product design remains underdeveloped.

China's strategic emphasis on the cultural and creative industries underscores the need to transform local artistic resources into marketable cultural assets. Dalian, a key coastal city in Northeast China, boasts a rich artistic tradition deeply rooted in maritime culture and urban modernity. However, compared to metropolitan hubs such as Beijing and Hangzhou, Dalian's cultural products still exhibit fragmented applications of local art, often limited to decorative motifs rather than coherent design frameworks. Consequently, the absence of a scientific and creative model impedes the translation of artistic identity into an innovative product design.

Previous studies have explored the application of Chinese paintings in cultural industries, but have primarily focused on heritage preservation, digital transformation, or marketing strategies. Few studies have addressed how a regionally distinct art form can be systematically embedded into product innovation through a creative design framework. Existing practices often reduce the identity of Dalian Chinese painting to superficial visual symbols without incorporating more profound cultural logic or user-centred design principles into their work.

To bridge this gap, the present study proposes a Creative Model that connects Dalian's artistic heritage with modern design practices through an integrated framework encompassing theoretical, practical, and social dimensions. The model draws on visual semiotics, design thinking, and cultural semiotics to guide the extraction, integration, and validation of artistic elements in product design. By employing a mixed-methods approach, including literature analysis, expert interviews, co-design workshops, and market evaluation, this study aims to construct and empirically verify a model that enhances both cultural resonance and market competitiveness.

This study contributes to three domains.

1. Theoretically, a systematic framework for embedding local art into cultural product design can be established.
2. Practically, by providing design guidelines that facilitate creative innovation and product differentiation, and
3. Socially, by promoting cultural inheritance, public engagement, and international exchange.

Ultimately, this study advances innovation rooted in tradition, offering a replicable pathway for sustainable cultural identity integration within contemporary design and reinforcing Dalian's position in the cultural economy.

## 2. Literature Review

The literature on the intersection of cultural heritage, regional art identity, and creative product design underscores the increasing recognition of the need to transform traditional art into contemporary, marketable forms. This review synthesises four major strands relevant to the present study: (1) the cultural and artistic context of Dalian City, (2) the identity of Dalian Chinese painting, (3) the development of Dalian's cultural products, and (4) the theoretical and practical foundations of creative models applied to design and innovation.

### 2.1. Dalian City: Cultural and Artistic Context

Dalian, a coastal metropolis in Northeast China, embodies a rich confluence of maritime culture, historical legacy, and modern urban identity. Its geographical position, surrounded by the Yellow and Bohai Seas, has shaped its cultural landscape through seascapes, fishing traditions and industrial modernisation.

As noted by Smith [1], Dalian's identity as a port city and cultural hub reflects the synergy between the natural environment and urban creativity, positioning it as fertile ground for artistic innovation. Nevertheless, compared with hubs such as Beijing and Hangzhou, Dalian's cultural industries remain fragmented and under-systematised, highlighting the need for frameworks that integrate regional culture into design practices [2].

### 2.2. Identity of Dalian Chinese Painting

Dalian Chinese paintings are characterised by oceanic symbolism, cool-toned colour palettes (blue-grey hues), and hybrid brushwork that combines freehand and meticulous styles. Thematically, it integrates marine landscapes, fishing villages, and industrial imagery, mirroring regional heritage and contemporary transformation.

Scholars such as Gao [3] and Li and Wang [4] have emphasised that while stylistic studies of Chinese paintings are abundant, few explore their systematic application in cultural product design. Most practices reduce artistic identity to surface decoration, lacking deep integration into the design logic and user experience.

### 2.3. Dalian's Cultural Products and Creative Industry Development

China's rapid expansion of cultural and creative industries (CCI) since the 1990s has reframed cultural heritage as a strategic asset for economic development [5]. Dalian's products merge traditional motifs with modern aesthetics; however, their development is constrained by the absence of standardised models and evaluation criteria [6].

Empirical studies suggest that while policies encourage the use of local "marine IP," the translation of such identity into scalable design solutions remains incomplete [7]. Hence, scholars have called for integrative models that bridge the art, design, and policy dimensions.

## 2.4. Creative Models: Concepts and Applications

Creative models serve as structured frameworks that guide ideation, experimentation and evaluation in diverse domains. The Design Thinking paradigm [8] and Cultural Semiotics [9] provide theoretical lenses for embedding meaning and innovation into design.

In product innovation, frameworks such as the Creative Product Analysis Matrix (CPAM) [10] and Idea Evaluation Models [11] facilitate a systematic assessment of originality and market relevance. However, their adaptation to localised cultural contexts remains limited, necessitating tailored models that align with regional identities and consumer preferences.

## 2.5. Research Gap and Conceptual Implications

The reviewed literature reveals the following key gaps:

1. Lack of systematic frameworks integrating regional artistic identity (e.g., Dalian Chinese painting) into modern design processes.
2. Insufficient empirical evidence validating creative models across cultural, innovative, and market dimensions
3. Limited focus on cross-disciplinary integration of art, design, and market data.

To address these gaps, this study proposes a three-phase creative model comprising identity extraction, design integration, and prototype validation, using qualitative and quantitative methods. This model bridges theory and practice, providing a replicable approach to embedding regional art into the cultural and creative industries.

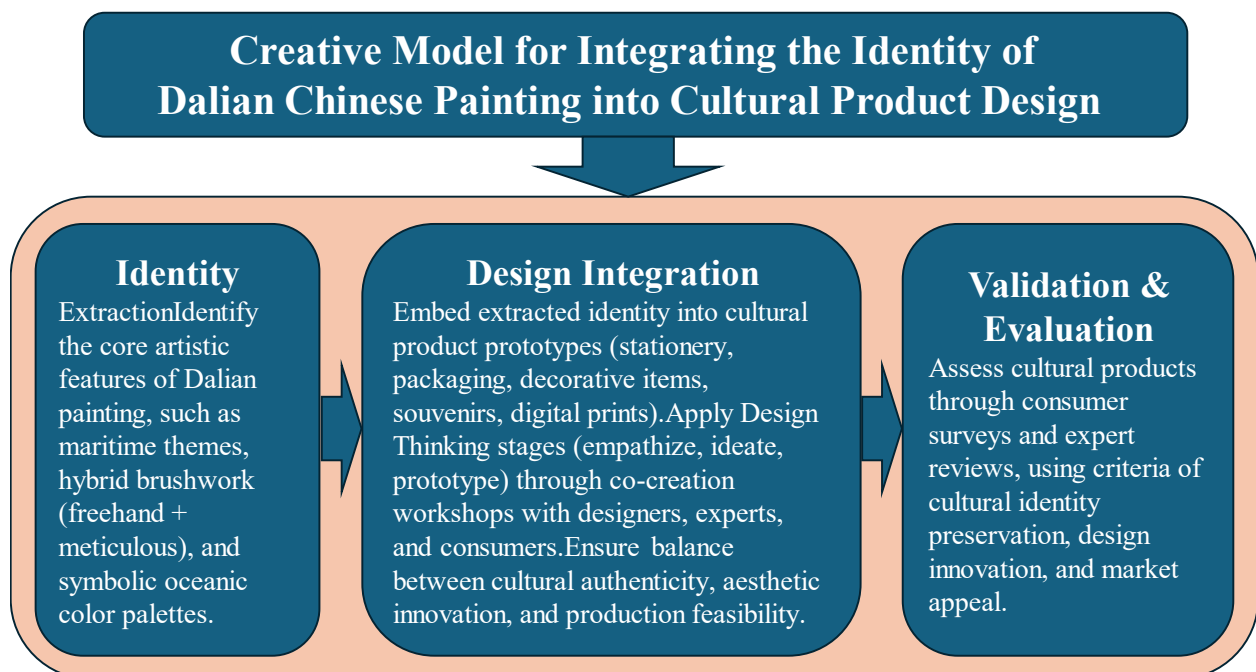
## 3. Research Methods

This study adopts a mixed-methods research (MMR) design to construct and validate a creative model that integrates the identity of Dalian Chinese painting into cultural product design. The research process combines qualitative and quantitative approaches across three sequential phases: (1) Extraction of Artistic Identity, (2) Integration into Product Design, and (3) Validation and Evaluation. This methodological structure ensures cultural authenticity and market applicability [12].

### 3.1. Research Design

The overall design is exploratory and developmental, aiming to establish a systematic framework linking regional art to design innovation (see Figure 1). The proposed research adopts a three-phase mixed-methods approach to ensure cultural authenticity and market applicability.

Figure 1 illustrates the Creative Model, which integrates the identity of Dalian Chinese painting into cultural product design and consists of three sequential phases: Identity Extraction, Design Integration, and Validation & Evaluation.



**Figure 1.**

Creative Model for Integrating the Identity of Dalian Chinese Painting into Cultural Product Design.

The overall design is exploratory and developmental, aiming to establish a systematic framework linking regional art with design innovation.

1. Qualitative methods (literature analysis, expert interviews, and participatory workshops) were used to identify artistic characteristics and integration strategies.

2. Quantitative methods (surveys and Likert-scale evaluations) were used to assess user perceptions, aesthetic appeal, and market potential.

This three-phase design aligns with previous creative model studies Runco and Jaeger [11]; Besemer and Treffinger [10] and Brown [8] emphasising iterative development, stakeholder collaboration and empirical validation.

**Table 1.**  
Overview of Research Phases.

Phase	Objective	Key Activities	Participants	Output
Phase 1: Extraction	Identify the core artistic elements of Dalian Chinese painting	Literature review, visual analysis, expert interviews	20–30 art scholars and practitioners	Catalogue of identity elements (themes, colours, brushwork)
Phase 2: Integration	Embed artistic identity into product design	Co-design workshops, prototype development	Designers, cultural experts, consumers	Prototype cultural products
Phase 3: Validation	Evaluate the model and prototypes	Surveys, market assessment, expert review	100 consumers, 10 experts	Quantitative ratings of aesthetics, identity, and innovation

### 3.2. Phase 1: Extraction of Artistic Identity

The first phase focused on identifying the defining features of Dalian Chinese painting. Through a comprehensive literature review and visual semiotic analysis, thematic attributes such as maritime imagery, hybrid brushwork, and symbolic colour palettes were identified.

Semi-structured interviews with 20–30 local artists, educators and cultural historians were conducted to validate these findings. Content analysis was applied to synthesise recurring themes, consistent with methodologies used in art-based research [13, 14].

### 3.3. Phase 2: Integration into Cultural Product Design

The second phase integrates the extracted identity into product design through co-creation workshops with designers, art experts, and consumers. The process employed the Design Thinking stages of empathising, ideating, and prototyping to develop concept sketches and physical prototypes.

The design criteria included:

1. Alignment with Dalian's artistic characteristics,
2. Aesthetic innovation, and
3. Feasibility of scalable production.

The outputs consisted of prototype cultural products (e.g., stationery, decorative objects, packaging) that reflected regional identity. This participatory approach ensures contextual relevance and creative originality [15, 16].

### 3.4. Phase 3: Validation and Evaluation

The final phase assessed the applicability and effectiveness of the model and prototypes using expert and consumer feedback. A structured questionnaire using a 5-point Likert scale measured perceptions across three dimensions:

1. Cultural Identity Preservation
2. Aesthetic Innovation
3. Market Appeal

Data were collected from 100 consumers and 10 experts from universities and cultural enterprises in Dalian.

Quantitative data were analysed using descriptive statistics (mean  $\pm$  SD), and qualitative comments were thematically coded to refine the models.

### 3.5. Ethical Considerations

All participants provided informed consent before the study. This study ensured confidentiality, voluntary participation, and data integrity in accordance with institutional research ethics standards [17].

### 3.6. Summary

By combining qualitative exploration and quantitative validation, this three-phase creative model offers a rigorous methodological framework for embedding regional art identity into cultural product design, providing both academic insights and practical design guidelines.

## 4. Results and Discussion

The proposed Creative Model, which integrates Dalian Chinese painting identity into cultural product design, was validated through expert reviews and consumer surveys. The findings from each phase demonstrate the model's capacity to bridge artistic tradition, design innovation and market appeal.

### 4.1. Phase 1: Extraction of Artistic Identity

The content analysis of expert interviews and visual reviews identified three primary dimensions of Dalian Chinese painting:

1. Thematic Identity: maritime landscapes, fishing villages, and industrial motifs
2. Stylistic Features: hybrid brushwork combining xieyi (freehand) and gongbi (meticulous) techniques;
3. Colour Symbolism: Dominant use of oceanic blue, port red, and misty grey reflects the coastal atmosphere.

Experts emphasised that these visual cues symbolise regional distinctiveness and convey cultural narratives relevant to Dalian's identity. The extracted attributes formed the foundation for subsequent design integration in this study.

#### 4.2. Phase 2: Integration into Product Design

The co-creation workshops generated six prototype product categories: stationery, packaging, souvenirs, decorative panels, and digital prints. Each prototype incorporated extracted visual elements and design logic based on the principles of Design Thinking.

Expert feedback highlighted that the prototypes achieved the following:

1. Aesthetic coherence with Dalian's painting identity,
2. Balanced integration of traditional motifs and modern form,
3. Commercial feasibility for mass production.

#### 4.3. Phase 3: Validation and Evaluation

A total of 110 participants (100 consumers and 10 experts) completed the evaluation using a 5-point Likert scale across three dimensions: Cultural Identity, Aesthetic Innovation, and Market Appeal.

**Table 2.**  
Evaluation Results of the Proposed Creative Model (n = 110).

Dimension	Indicators	Mean (M)	Standard Deviation (SD)	Interpretation
Cultural Identity	Reflects Dalian's artistic style	4.52	0.48	Very High
	Preserves regional symbolism	4.45	0.51	High
Aesthetic Innovation	Creative design elements	4.38	0.54	High
	Harmonious fusion of art and design	4.41	0.49	High
Market Appeal	Consumer attractiveness	4.32	0.55	High
	Purchase intention	4.27	0.58	High
Overall	—	4.39	0.52	High

The results indicated an overall mean score of  $4.39 \pm 0.52$ , demonstrating strong acceptance of the model across all dimensions. The highest score was observed for Cultural Identity ( $M = 4.52$ ), reflecting the success of embedding regional aesthetics. Aesthetic Innovation ( $M = 4.38$ ) and Market Appeal ( $M = 4.32$ ) further confirm the balance between cultural authenticity and commercial potential of the collection.

#### 4.4. Discussion

##### 4.4.1. Theoretical Implications

This study validates the concept that cultural identity can be systematically embedded in design innovation through a structured creative model.

This supports prior frameworks in cultural semiotics [9] and Design Thinking [8] confirming that the fusion of traditional artistic codes and user-centred design leads to meaningful innovation [15].

The proposed model aligns with the Creative Product Analysis Matrix (CPAM) [10] fulfilling the criteria of novelty, resolution, and elaboration.

##### 4.4.2. Practical Contributions

The model provides designers with a methodological toolkit for translating their artistic heritage into design outputs. The participatory workshops fostered cross-disciplinary collaboration, and empirical validation confirmed their relevance to the creative industries.

Designers and cultural enterprises can employ this model to develop regionally branded products with enhanced cultural value and market differentiation.

##### 4.4.3. Social and Educational Value

Beyond commercial applications, the model contributes to cultural sustainability and art education. By transforming Dalian's painting identity into tangible products, it promotes public awareness and intergenerational transmission of traditional art, aligning with UNESCO's agenda to safeguard the intangible heritage [18].

#### 4.5. Summary

Overall, the results affirm that the proposed three-phase creative model successfully integrates artistic identity, design innovation, and market feasibility. The high evaluation scores across all indicators substantiate its transferability to other regional art contexts and its potential as a blueprint for developing sustainable cultural products.

## 5. Conclusion

This study developed and validated a Creative Model designed to integrate the identity of Dalian Chinese painting into cultural product design. Employing a three-phase mixed-methods framework comprising identity extraction, design integration, and empirical validation, this study demonstrates how local artistic heritage can be systematically integrated into contemporary creative practices. The findings confirm the model's effectiveness across key dimensions: Cultural Identity ( $M = 4.52$ ), Aesthetic Innovation ( $M = 4.38$ ), and Market Appeal ( $M = 4.32$ ), reflecting strong user acceptance and expert endorsement.

This study verifies that structured creative frameworks can harmonise cultural authenticity with design innovation, thereby transforming intangible heritage into tangible design outcomes that support regional branding and sustainability.

### 5.1. Contributions

#### 5.1.1. Theoretical Contribution

This study contributes to the theoretical discourse on cultural semiotics and design thinking by offering a replicable model that operationalises artistic identity in product innovation research. It synthesises qualitative and quantitative methods, bridging the gap between aesthetic theory and empirical validation.

#### 5.1.2. Practical Contribution

The model provides designers and cultural enterprises with a systematic toolkit for embedding local art into the development of creative products. This enables the creation of products that reflect regional distinctiveness, enhance brand value, and strengthen market differentiation within the cultural and creative industries.

#### 5.1.3. Social and Educational Contribution

By transforming Dalian's artistic identity into accessible design outputs, this study promotes cultural awareness, supports heritage preservation, and offers pedagogical insights for art education. Thus, the model contributes to cultural transmission and creative capacity building in academic and community settings.

### 5.2. Implications

The findings underscore that localised creativity can simultaneously drive cultural resilience and economic vitality when systematically integrated into design processes. The model also provides a reference for policymakers and cultural planners seeking to align creative strategies with UNESCO's 2030 Agenda for Sustainable Development.

### 5.3. Limitations and Future Work

Despite its validated effectiveness, this study was limited by its regional focus (Dalian) and prototype-based evaluation. Future research should:

1. Applying the model to other regional art forms for cross-cultural comparison
2. Integrate digital technologies (e.g., AR/VR, digital fabrication) to expand user interaction.
3. Conduct longitudinal studies on market adoption and cultural impacts.

By addressing these directions, subsequent research can extend the model's applicability and enhance its contribution to the global creative industries.

In conclusion, the proposed Creative Model establishes a practical and theoretical foundation for integrating artistic heritage into contemporary design, promoting sustainable innovation, and fostering dialogue between tradition and modernity.

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