

Innovative Packaging Forms and Materials for Heilongjiang Carving Crafts Under the Longjiang Revitalization Strategy

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Abstract: Heilongjiang carving crafts embody both artistic and cultural value and represent a cultural treasure of Longjiang. However, their modern dissemination is significantly constrained by packaging. Under the Longjiang revitalization strategy, innovating the packaging of Heilongjiang carving crafts is an important measure to serve revitalization goals, activate industrial potential, enhance market competitiveness, deepen cultural transmission, and promote sustainable development. At present, packaging for Heilongjiang carving crafts faces problems such as homogeneous forms, material choices that deviate from ecological principles, and insufficient user experience. Accordingly, innovation should be advanced across multiple dimensions, including conceptual innovation in form design, optimization of structural functions, integration of digital technologies, and modern application of traditional materials.

Keywords: Longjiang Revitalization, Heilongjiang Carving Crafts, Packaging, Form, Materials.

1. Introduction

Longjiang revitalization is a systemic project through which Heilongjiang Province accelerates the formation of new quality productive forces, builds a modern industrial system, and achieves high-quality development under the framework of the comprehensive revitalization strategy for Northeast China. Key measures include developing new quality productive forces, building a strong modern-agriculture province, creating a new frontier for northward opening-up, strengthening industry-university-research integration, reinforcing the northern ecological barrier, and coordinating urban-rural development and public services. Under this context, the development of Heilongjiang carving crafts is a key task of cultural revitalization. Yet, current packaging remains insufficient to fully meet revitalization requirements, and therefore practical improvement pathways must be explored [1].

2. The Necessity of Innovating Packaging for Heilongjiang Carving Crafts Under Longjiang Revitalization

2.1. Serving Longjiang Revitalization Goals

Packaging innovation can serve both cultural revitalization and industrial revitalization goals. Wood carving, ice-and-snow carving, Hezhe fish-skin carving, and northern red agate carving are important cultural carriers in Heilongjiang. Traditional rough or generic packaging often fails to convey cultural depth. Appropriate innovation can strengthen cultural revitalization efforts. Industrial revitalization policies explicitly call for “integrating traditional crafts with modern design.” As the “first impression” for consumers, packaging innovation can enhance attractiveness, enable creative design to empower the upgrading of traditional industries, and support revitalization goals.

2.2. Activating Industrial Potential

At present, packaging for Heilongjiang carving crafts suffers from severe homogenization, single functions, low added value, and insufficient industrial-chain value. Under the revitalization orientation, packaging innovation can improve product premiumability, adapt to e-commerce and cross-border logistics, drive the development of supporting industries such as packaging materials, printing, and design, and promote digital-technology adoption, thereby activating industrial potential and stimulating related industries.

2.3. Enhancing Market Competitiveness and Consumer Experience

Market competitiveness and consumer experience are closely linked to packaging. By integrating local cultural elements and enhancing visual appeal, packaging innovation can strengthen uniqueness and create distinctive recognition. Younger consumers value social attributes and emotional value; by enriching social interactivity and emotional connotations, innovative packaging can better match the needs of younger groups. Furthermore, innovation that emphasizes refinement and collectability can increase added value, strengthen gift attributes, and meet diverse scenario demands such as festivals, travel souvenirs, and business gifting, thereby improving market penetration.

2.4. Deepening Cultural Transmission

Under Longjiang revitalization, packaging innovation can deepen cultural transmission. Intangible heritage elements such as Suileng black pottery carving, birch-bark craft, and Manchu embroidery can be integrated into packaging, turning packaging itself into a display window for intangible heritage and revitalizing related skills. Packaging copy and visual design that incorporate Heilongjiang legends, local cultural narratives, and the “Chuang Guandong” spirit can further promote regional cultural dissemination, convey Longjiang cultural charm to consumers, and strengthen local cultural identity.

2.5. Responding to Green, Low-Carbon, And Sustainable Development Principles

Innovating packaging for Heilongjiang carving crafts is also an important response to green, low-carbon, and sustainable development. Using local eco-materials such as birch wood, straw, and recycled paper can promote greener materials and reduce resource waste [2]. By balancing protection, environmental requirements, and display value, advocating appropriate packaging, and designing reusable packaging, resource waste can be further reduced. Embedding ecological concepts into packaging - through natural textures, eco-labels, and related elements - can also communicate regional achievements in ecological protection and strengthen the transmission of ecological values.

3. Major Problems in Packaging Forms and Materials for Heilongjiang Carving Crafts

3.1. Single Forms

Current packaging forms are relatively single, mainly using generic square boxes or cylinders with simple internal structures. After opening, consumers often only obtain the craft itself and find it difficult to learn deeper information through the packaging, such as background stories, craft processes, and cultural meanings. As a result, the packaging lacks sufficient cultural-communication value.

3.2. Material Choices That Deviate from Ecological Principles

The use of packaging materials commonly deviates from ecological principles. Many lower-end products use non-degradable materials such as plastic foam and plastic bags, which contradict the natural and ecological values conveyed by carving crafts and can cause environmental problems. Some higher-end packaging uses large quantities of rare hardwood or genuine leather, and over-packaging is also common; these practices are likewise inconsistent with modern sustainability.

3.3. Insufficient Experience

Most current packaging designs are disposable and single-direction opening structures. Consumers often lack interaction and experiential quality in the unboxing process. In modern contexts, consumers - especially younger groups - value interactive experience and emotional connection. Insufficient experience provided by packaging can reduce unboxing to mechanical operation, missing opportunities to build emotional bonds.

4. Key Points for Innovating Packaging Forms and Materials Under Longjiang Revitalization

4.1. Innovating Form-Design Concepts

Under Longjiang revitalization, innovation in packaging forms should begin with conceptual innovation in form design. Modern packaging is not only a product container, but also a medium for cultural communication, a bridge for emotional connection, and a support for personalized consumption demands. Conceptual innovation for packaging forms of Heilongjiang carving crafts mainly involves three dimensions:

culture-embedding concepts, user-interaction concepts, and function-integration concepts.

From the culture-embedding dimension, form innovation should deepen the presentation of cultural essence. It should not be limited to printing superficial symbols such as birch forests, ice and snow, or black soil, but should strengthen the packaging's immersive cultural narrative value. By using packaging as a scenario-based story carrier to tell "Longjiang stories," consumers can experience rich narratives through the packaging itself, supporting regional cultural communication. Packaging can also serve as a carrier for living display of local intangible-heritage skills, further strengthening cultural embedding[3].

From the user-interaction dimension, form design should balance interactivity and personalization. It should strengthen consumers' active participation during unboxing and enhance product experience. On the one hand, packaging forms that allow consumers to assemble components can increase participation; on the other hand, scenario-extension interactive designs can provide additional interactive functions and improve user experience.

From the function-integration dimension, packaging should move beyond a single protection function and emphasize multi-scenario adaptability. By designing sustainable forms with "one object, multiple uses," lightweight forms adapted to cross-border logistics, and visualized forms adapted to online display, packaging can better match different scenarios and meet full-scenario market needs.

4.2. Optimizing Structural Functions

On the basis of innovative form-design concepts, optimizing structural functions can make protection more reliable and improve functional integration and intelligent adaptation. Enhancing protective structural design should focus on material collaboration and structural topology optimization, improving protection while keeping packaging lightweight, thereby reducing breakage rates.

For example, composite reinforcement frames can increase compressive strength while reducing weight. A composite structure such as a "birch mortise-and-tenon frame plus honeycomb straw core," with natural pine-resin layers for moisture protection, can retain wood texture externally while enhancing internal strength. A floating anti-shock structure can also be designed: elastic suspension using birch-bark woven cords and straw cushioning pads between the craft and the package can absorb impact energy through elastic deformation, protecting the internal craft from severe shocks.

Innovative structural-form functions can give packaging additional functions beyond storage and protection, such as display and reuse. Modular-assembly packaging can adjust module spacing for different craft sizes and scenarios, use magnetic splicing to combine patterns, and repurpose disassembled modules as display stands and storage boxes, expanding practical utility. Innovations in opening and display forms can also improve user experience: for instance, a pull-out birch-bark package can trigger built-in LED lights to illuminate craft details; a double-opening mortise-and-tenon wooden box can allow the lid to be flipped and assembled into a display platform, with lining printed with Longjiang intangible-heritage motifs, transforming the package into a cultural display stand.

Intelligent adaptation design can meet dynamic demands of e-commerce livestreaming and cross-border logistics. For

livestreaming, a structure combining transparent birch composite panels and a rotating base can support 360-degree display of carving details, while an NFC chip in the base allows viewers to scan for artisan stories, product information, and cultural connotations. For cross-border logistics, lightweight, high-strength, moisture-resistant composite structures can be designed to meet standards of Russia and Northeast Asian markets, with foldable storage when unused and stable performance during transportation under bumps, low temperatures, and humidity.

4.3. Deepening Digital-Technology Integration

Under modern conditions, packaging-form innovation can deepen digital-technology integration, expanding packaging functions and value through intelligent design. AR can be applied by printing AR markers on packaging: before purchase, consumers can scan to view a 3D model of the craft and stimulate purchase intention; after unboxing, they can scan internal markers to watch virtual demonstrations of carving processes, learn background stories, and appreciate intangible-heritage motifs, addressing the pain point that fragile crafts are not convenient for repeated handling while enriching cultural meaning.

Blockchain can be used for anti-counterfeiting traceability. A unique digital identity can be built for each craft and stored in an NFC chip or QR code, allowing consumers to trace full-process information and verify authenticity, thus combating counterfeits and protecting brand value. Internet-of-Things technologies can also be applied: micro temperature-and-humidity sensors can be installed for valuable-material crafts, monitoring storage conditions in real time and triggering alerts when parameters exceed thresholds, preventing damage caused by unsuitable environments [4].

4.4. Modern Application of Traditional Materials

Modern application of traditional materials is a key focus in packaging-material innovation under Longjiang revitalization. It helps local traditional materials break constraints of their original forms, adapt to modern logistics, consumption, and environmental demands, and become packaging carriers with rich cultural meaning and high added value. In traditional modes, material use often stays at the primary level of cutting and splicing, which cannot fully meet modern requirements. Therefore, innovation should adopt ideas of material compositing, function-scenario adaptation, and cultural symbolization: combining traditional materials with eco-friendly adhesives to improve strength while retaining natural feel; customizing material forms based on scenarios and product characteristics; and integrating natural textures with Longjiang cultural symbols such as ice-and-snow and intangible-heritage motifs so that packaging

becomes a “touchable” cultural carrier.

For birch bark, modern application should retain advantages such as water resistance, flexibility, and distinctive natural textures, while using modern processes to address pain points. Birch bark can be prone to mildew, cracking, and insufficient strength; it may be treated through low-temperature degreasing to remove resins, steam softening to increase flexibility, and natural plant extracts (e.g., pine-needle essential oils) for anti-mildew treatment. To avoid single-form limitations, birch-bark packages can combine mortise-and-tenon structures with foldable designs: folded, it functions as a shock-resistant storage box; unfolded, it can display birch-bark art. Decorative effects can be enhanced through laser engraving or pyrography, reproducing Longjiang cultural patterns and textures.

For agricultural waste such as straw and rice husks, modern application can convert them into low-cost, degradable packaging auxiliaries, supporting ecological revitalization goals. With high-temperature compression molding and starch-based adhesive bonding, straw fibers can be made into honeycomb cushioning liners, producing low-cost and degradable inner packaging for fragile crafts. Custom molding based on product contours can improve fit and protection. Printing Longjiang cultural patterns on the surface or mixing black-pottery powder into straw materials can further enhance texture and cultural connotations.

5. Conclusion

In sum, under Longjiang revitalization, it is necessary to innovate packaging forms and materials for Heilongjiang carving crafts. On the basis of ensuring core storage and protection functions, packaging should expand functions, improve user experience, adapt to multiple scenarios, and enrich cultural meaning. With continuous technological development and intensified market competition, packaging design is becoming increasingly important, and feasible pathways for innovation in packaging forms and materials should be continuously explored.

References

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