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# Design of Encrypted Cultural and Creative Products for Ice and Snow Tourism in Heilongjiang Province under the Metaverse Concept

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**Abstract:**

*Starting from the perspective of developing Heilongjiang's digital economy and optimizing industrial structure, this paper incorporates the design of cultural and creative products for ice and snow tourism in Heilongjiang into the overall environment of regional digital economic development. By relying on Heilongjiang's ice and snow culture, cultural and creative products are cast on the blockchain to promote their encryption, ownership, and circulation. A comprehensive interdisciplinary research approach is employed. Firstly, based on the review of the literature, the origins and development of Heilongjiang's ice and snow culture are outlined. Then, usable artistic elements are extracted and transformed into cultural and creative encrypted artworks based on customer value demands and product positioning, realizing the traceability and rights confirmation of cultural and creative products, increasing their tradable value, and exploring the development path of encrypted cultural and creative products for ice and snow tourism. Finally, active consideration is given to the design and development strategies of encrypted cultural and creative products for ice and snow tourism in Heilongjiang Province, new experiences are summarized, and contemporary insights are gained.*

**Keywords:**

*Metaverse; Ice and Snow Tourism; Encrypted Cultural and Creative Product Design*

## 1. Introduction

During the "14th Five-Year Plan" period, China's digital economy has entered a new stage of deepening application, standard development, and inclusive sharing. Developing the digital economy is a significant opportunity for Heilongjiang, a strategic direction for industrial and economic structural adjustment, and a top priority for Longjiang's revitalization and development. As people's lifestyles undergo tremendous changes, the desire for the symbiosis of virtual and real dimensions becomes increasingly prominent, with the concept of the "Metaverse" attracting widespread attention. On the artistic front, virtual cultural consumption is gradually replacing traditional art consumption, and new technologies such as artificial intelligence and blockchain have emerged in the field of art. The Internet has become a gathering place for art collectors and investors, as well as a space for the encryption and trading of artworks. The design of encrypted cultural and creative products in the "Metaverse" economic system has broad market prospects, with nearly 20 domestic cultural and museum institutions, such as the Palace Museum, Dunhuang Academy, and Hubei Provincial

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Museum, issuing digital collections.

The report of the 20th National Congress of the Communist Party of China proposed: "Adhere to the principle of shaping tourism with culture and promoting culture through tourism, and promote the deep integration of culture and tourism." Creating a pattern of deep integration of culture and tourism is an objective requirement for the transformation and development of culture and tourism itself. Cultural and creative products, as material entities or intangible forms of services that meet consumer needs and combine cultural, creative, and commercial elements, often have a humanistic historical aura, with popular elements widely applied, enhancing their fashionable appeal. In the new era, the renewal of design thinking, tools, and technologies has promoted the innovative development of cultural and creative products.

The research on the design of encrypted cultural and creative products for ice and snow tourism is based on Heilongjiang's ice and snow tourism resources, bringing the light of technology into reality. Through the digital design of ice and snow tourism cultural and creative products, it aims to promote Heilongjiang's ice and snow culture and contribute to the construction of Digital China.

## 2. Significance of Ice and Snow Tourism Encrypted Cultural and Creative Product Design

The design of encrypted cultural and creative products for ice and snow tourism focuses on the dynamic inheritance and innovative application of culture. It applies technological advancements to modern cultural and creative design, forming cultural tourism-themed intellectual properties through the creative expression of visual symbols of ice and snow tourism culture. By utilizing blockchain smart contracts, programmable encrypted cultural and creative products for ice and snow tourism are directly produced. These encrypted products, as digital assets, possess characteristics such as traceability, indivisibility, and substitutability compared to traditional cultural and creative products. They feature a decentralized transaction model, leading to high market demand.[1] Currently, encrypted cultural and creative products are still in the early stages of development, with insufficient research on cultural inheritance and related development strategies in their design. There is ample creative space in the inheritance of ice and snow tourism culture. In Heilongjiang Province, efforts are being made to build a new engine for the development of the ice and snow economy and creative design economy, aiming to achieve leapfrog development. This aligns with the aesthetic needs and consumption psychology of the people in the new era, and integrating the regional culture of Heilongjiang into the research and development of ice and snow tourism encrypted cultural and creative products is of great significance.

In terms of technological advancements, the application of new technologies such as artificial intelligence and blockchain in the design of ice and snow tourism cultural and creative products is promoted. Virtual cultural consumption is gradually replacing traditional art consumption, facilitating the transition of information technology and human civilization into virtual space. The design of encrypted cultural and creative products innovates the processes of artistic creation, exhibition, auction, trading, and finance, promoting the formation of a new art field and the iterative updating of the market ecology.

In terms of cultural dissemination, we fully leverage the regional cultural advantages, transforming visual symbols from various aspects such as clothing, food, accommodation, transportation, tourism, and entertainment unique to Heilongjiang's ice and snow culture. We utilize modern design language to showcase the

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distinctive ice and snow culture of Heilongjiang. This leads to the creation of new visual symbol bridges and cultural communication methods, enhancing the product's irreplaceability and technological added value. It rejuvenates the culture of ice and snow tourism in Heilongjiang as it strides into a new era and new circumstances.

In terms of industrial development, based on regional advantages, we vigorously develop the ice and snow digital economy, explore new paths for the development of ice and snow tourism cultural creativity in Heilongjiang, summarize new experiences, and gain contemporary insights. This can contribute to the growth of the ice and snow tourism cultural and creative industry in Heilongjiang, focusing on building a modern industrial system with a "4567" focus and promoting the development of the cultural and entertainment modern service industry.

## 3. Advantages of Ice and Snow Tourism Encrypted Cultural and Creative Products

In the era of rapid development of information technology, the concept of the metaverse has emerged, and the widespread application of technologies such as virtual reality and blockchain has played a huge role in the continuous design and improvement of digital cultural and creative products. Users can create, share, and purchase native virtual worlds in the metaverse, creating ice and snow tourism cultural and creative products that are completely different from the real world. Although the human journey toward the metaverse as a practical goal is still very short, with the popularity of mass culture, it will eventually achieve the desired effect in the future. Under the overall trend of the era's development, the continuous innovation of content in digital entertainment and immersive experiences provides possibilities for the research and practice of ice and snow tourism encrypted cultural and creative product design.[2] The advantages of encrypted cultural and creative products are gradually highlighted in the development of the digital economy and the promotion of the tourism industry.

### *3.1 Increased Collectible Value of Cultural and Creative Products*

The application of blockchain technology allows the data layer of encrypted art to record the timestamp and issuer of the work at the moment of issuance, with a unique on-chain ID, which can verify authenticity. Transaction information generated during each circulation can be queried and credit can be established in long-term issuance and market transactions. When encountering similar or identical works, differentiation can be made by comparing the sequence of timestamps and issuer information, thereby strengthening the uniqueness of digital artworks and increasing their collectible value.

### *3.2 Simplified Transaction Process for Cultural and Creative Products*

Traditional artworks have stringent requirements for environmental conditions during preservation, transportation, and trading, while encrypted cultural and creative products, due to their online transactions, transfers, and holdings, bypass logistical processes, simplifying their transactions to the maximum extent. The issuance of ice and snow tourism encrypted cultural and creative products is not restricted by third parties; they are stored on decentralized blockchains, allowing holders to showcase and trade them online on auction platforms and virtual stores associated with public chains.

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### *3.3 Ownership Continuity of Cultural and Creative Products*

The value of encrypted cultural and creative products depends on both consumer aesthetics and choices, as well as market prices, thus forming an effective measure of value. Encrypted cultural and creative products are traceable, and designers hold shares of the products through the execution of smart contracts, receiving a fixed proportion of royalties in the subsequent circulation of the products, thus retaining ownership continuity and achieving permanent income sharing.[3]

## 4. Development and Design Path of Ice and Snow Tourism Encrypted Cultural and Creative Products in Heilongjiang Province

Heilongjiang, the province with the highest latitude in China, boasts unique geographical and climatic conditions for the development and preservation of ice and snow resources. Here, material and spiritual cultures revolving around ice and snow are fully showcased, attracting visitors from all directions to enjoy ice and snow activities. Therefore, the development of the ice and snow culture creative industry in Heilongjiang has unique geographical advantages. The profound ice and snow culture provides an endless source of creativity for the design of encrypted cultural and creative products. At the same time, integrating artificial intelligence and blockchain technology into the design of ice and snow tourism cultural and creative products transforms traditional design forms into digital ones, effectively increasing the technological content of cultural and creative products, adapting to the development of the information society, better fulfilling the function of information dissemination, and further enhancing their cultural and technological added value.

### *4.1 Exploration of Heilongjiang's Ice and Snow Culture Connotation*

The cultural civilization of the Heilongjiang River Basin, along with the cultural civilizations of the Yellow River Basin and the Yangtze River Basin, is known as one of China's three major cultural origins. From the perspective of cultural changes and compositions, it has great inclusiveness. The integration of ice and snow culture with local minority cultures, Guandong culture, overseas Chinese culture, and red culture has formed a unique business card for Heilongjiang, attracting tourists from all over the country. Ice and snow folklore culture resources (such as minority culture, Guandong culture, overseas Chinese culture, and red culture), ice and snow art culture resources (such as ice lanterns, ice sculptures, snow sculptures, and ice prints, among which ice printing art is unique to China), and ice and snow festival culture resources (such as the Harbin International Ice and Snow Festival, the first regional ice and snow festival in China with ice and snow activities as its core, known as one of the world's four major ice and snow festivals along with the Sapporo Snow Festival in Japan, the Quebec Winter Carnival in Canada, and the Winterlude in Ottawa, Canada) are compiled and explored to demonstrate the distinctive spiritual connotation of ice and snow culture.

### *4.2 Positioning of Ice and Snow Tourism Encrypted Cultural and Creative Product Design*

Starting from the perspective of the audience and focusing on the dissemination of Heilongjiang's ice and snow culture, questionnaire surveys and customer value curve analysis methods are employed to explore the characteristics of Heilongjiang's ice and snow culture resources and identify customer value demand points. Based on the information dissemination methods and market ecology of the digital economy era, a value factor matrix for the development and design of ice and snow tourism encrypted cultural and creative products is constructed, forming an accurate product positioning.

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### *4.3 Transformation of Visual Elements of Ice and Snow Tourism Culture in Heilongjiang Province*

From the perspective of daily life, visual symbols can be transformed from the unique aspects of clothing, food, housing, transportation, activities, and entertainment in Heilongjiang's ice and snow culture. "Clothing" includes animal fur hats, scarves, gloves, etc.; "Food" includes Matryoshka ice cream, frozen fruits, candied haws, etc.; "Housing" includes ice houses, snow scene houses, snow houses, etc.; "Transportation" includes snowmobiles, dog sleds, etc.; "Activities" include snow expos, ice and snow worlds, ski resorts, ice and snow parks, etc.; "Entertainment" includes winter fishing, ice skating, skiing, winter swimming, ice slides, dog sleds, snowball fights, etc. Extracting the imagery and symbolic elements from these aspects, the artistic features and spiritual connotations of Heilongjiang's ice and snow culture are presented in the form of visual symbols. By blending fashion with culture, creating distinct highlights, and utilizing the "brand fan economy" to form their loyal customer base, creating internet-famous culture, establishing distinctive brands, and driving industry development.

From a design and artistic perspective, visual symbols can be extracted from various elements of Heilongjiang's ice and snow culture, including imagery elements, symbolic elements, and craftsmanship elements. The imagery elements include the shapes, colors, and patterns of ice and snow artworks. Symbolic elements encompass ice and snow entertainment customs, values, cultural stories, and more. Craftsmanship elements involve ice and snow art masters, production techniques, materials, tools, etc.[4]

In terms of imagery element extraction, Heilongjiang boasts a diverse range of ice and snow imagery elements, including majestic snow-capped mountains, sparkling ice sculptures, and swirling snowflakes, as well as cultural symbols like ice and snow festivals and sports. These elements not only represent the natural beauty of ice and snow but also reflect the locals' love for and creativity with ice and snow. Designers can utilize techniques such as shape, line, and color to express these imagery elements. They can employ concrete or abstract methods to transform these imagery elements into unique visual symbols, making their works more identifiable and appealing.

Regarding the extraction of symbolic elements, the ice and snow culture of Heilongjiang contains more than just coldness and purity; it also embodies resilience and passion. The resilient vitality and love for life displayed by people in the harsh cold constitute important connotations of ice and snow culture. Designers can draw inspiration from this spirit and incorporate elements such as resilience and passion into their works, creating stronger emotional resonance in their pieces.

Extraction of craftsmanship elements is crucial for realizing design works. In the design of ice and snow culture, craftsmanship elements involve aspects such as material selection, production techniques, and technical applications. The stories of ice and snow art masters can be presented in a visualized manner to establish consumers' trust and to embed many intangible cultural resources within the art masters. Designers can explore the aesthetic characteristics of materials used in production from aspects such as visual, tactile, craftsmanship, texture, and color, highlighting the recognizability of their distinctive cultural features. Additionally, modern technological methods such as digital modeling and 3D printing can be utilized to achieve more complex ice and snow cultural design works.

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In conclusion, the extraction and transformation of ice and snow culture elements into visual symbols from a design and artistic perspective necessitates a comprehensive consideration of symbolic, imagery, and craftsmanship elements. By delving into the connotations of ice and snow culture and skillfully integrating these elements, we can create ice and snow cultural works that are not only rich in cultural significance but also possess a unique aesthetic appeal.[5]

### *4.4 Generation of Ice and Snow Tourism Encrypted Cultural and Creative Products in Heilongjiang Province*

By exploring the simple survival philosophy and aestheticism inherent in Heilongjiang's ice and snow culture and its compatibility with the era of artificial intelligence, ice, and snow tourism cultural and creative products are cast on the blockchain to achieve encryption, ownership, and circulation of artworks. Utilizing ice and snow cultural encrypted artworks as carriers, the distinctive ice and snow culture of Heilongjiang is showcased through the language of contemporary design. Ice and snow tourism encrypted cultural and creative products are divided into native encrypted cultural and creative products and non-native encrypted cultural and creative products.

(1) Native Encrypted Cultural and Creative Products

One category of encrypted cultural and creative products is native encrypted cultural and creative products, which are original digital artworks created through digital technology. The legal entities of creators can be individuals, legal persons, or institutions. Creators directly create the intellectual property of cultural and creative products using blockchain thinking and technology, then issue them on the chain in the form of digital currency (TOKEN), and exhibit and auction them on virtual sales platforms, providing a broader space for the development of encrypted cultural and creative products.

(2) Non-native Encrypted Cultural and Creative Products

Non-native encrypted cultural and creative products utilize blockchain technology to upgrade traditional cultural and creative products, encrypting a form of "history". Creators use digital transformation tools such as digital cameras and computer software to digitize physical cultural and creative products such as birch bark paintings, fish skin paintings, paper-cuttings, and leather-cuttings, which are rich in regional characteristics, or life items such as ice and snow-themed bookmarks, keychains, and refrigerator stickers. These products are then mapped onto the blockchain through blockchain technology, solving the issues of copyright and traceability of cultural and creative products. Cultural and creative products exist in both physical and non-fungible token forms. Buyers can use tokens to exchange for physical products or engage in secondary trading and mortgages. This transaction model eliminates the risk of damage during the transportation of cultural and creative products, realizing the separation of transaction rights and ownership rights of cultural and creative products.[6]

## 5. Outlook on the Development of Heilongjiang Province's Ice and Snow Tourism Encrypted Cultural and Creative Products

As the enthusiasm for the metaverse continues to rise, the value of NFT artworks worldwide has skyrocketed. However, concurrently, we have encountered some challenges in the development and design of

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encrypted cultural and creative products. We are actively contemplating the development strategies for Heilongjiang Province's ice and snow tourism encrypted cultural and creative products, summarizing new experiences, and deriving contemporary insights from them.

## *5.1 Issues Faced by Ice and Snow Tourism Encrypted Cultural and Creative Products*

(1) Infringement of Designers' Ownership Rights

In the creation process of ice and snow tourism cultural and creative products, the key channel is casting them onto the blockchain, making the cultural and creative products NFTs, and forming encrypted artworks. After designers complete their creations, their works may be turned into NFT tokens and sold on the chain without their knowledge, thereby infringing on the designers' ownership rights.

(2) Encouragement of Insider Trading and Manipulative Practices

Purely transparent transactions are difficult to achieve in the encrypted art market. Currently, technology can only verify the name authentication and transaction volume of electronic wallets. If behind-the-scenes manipulators use multiple usernames to register virtual currency wallets, they can engage in "left-hand to right-hand" flipping, artificially inflating market prices through multiple transactions. The presence of false data enables the possibility of manipulative practices and insider trading.

(3) Inability to Completely Eliminate Intermediaries

Although NFT trading platforms seem to bypass the lengthy and multiple sales links such as art galleries, exhibition halls, and various dealers in the creative product market, there are still shortcomings and loopholes. Some platforms set thresholds and operate on an invitation-only basis, effectively introducing invisible intermediaries, and becoming the new "middlemen" in the digital world. The industry hopes that under the guidance of the government, industry standards will be introduced and formulated soon, and security levels will be established to promote the healthy, orderly, and rapid development of the cultural creative industries, and digital art industries. "Leveraging the new track of encrypted art, vigorously develop the regional digital economy."[7]

## *5.2 Trends and Impacts of Ice and Snow Tourism Encrypted Cultural and Creative Product Development*

The continuous development of information technology and human civilization has propelled the topic of the metaverse from the halls of academia to the public sphere. Human understanding of societal forms is gradually transitioning towards virtual space. The future metaverse will inevitably accommodate more users and behaviors through information acquisition and connectivity, providing shared experiences. It will extend beyond constructing an information society to become an experiential and symbiotic society. A new, imaginative digital world experience awaits...

(1) Updates in Artistic Creation Methods

Art and design researchers, driven by a common mission, persist in countless design practices and refinements. In the development and design of ice and snow tourism encrypted cultural and creative products in Heilongjiang, they continuously optimize technical methods and artistic design approaches, enhancing the au-

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tonomy, interactivity, and innovation of encrypted cultural and creative product creation. Creators engage in multi-sensory, real-time creation within the virtual space of the metaverse using embedded tools. This process ensures that each ice and snow cultural and creative product extracts the essence of the northern cold region's ice and snow culture, activating its vibrant artistic vitality in new media of the era.

(2) Transformation of Cultural Communication Methods

Based on blockchain technology, the ice and snow tourism encrypted cultural and creative products in Heilongjiang Province possess both artistic and financial attributes. With the dual attributes, they have both artistic and collectible value. Additionally, cryptocurrency has revolutionized traditional financial markets, creating offshore financial markets, and granting creators permanent income rights to their works. Leveraging the closed-loop ecosystem of cryptocurrency finance, a new artistic domain and market ecosystem have emerged. The NFT mechanism empowered by blockchain technology provides open-source technology and platforms. Users enter virtual communities to establish scenic area shops, art studios, and more. Adopting the "virtual space" model, a tourism and cultural space parallel to the real world is established in the metaverse, where works can be created, exhibited, and traded. This cultural communication method differs from traditional cultural and creative products. Currently, encrypted cultural and creative products are in their early stages of development. Collectors of digital artworks are active in the encrypted product market. With the increasing activity in the market and the iterative upgrade of information technology, the creation of ice and snow tourism encrypted cultural and creative products in Heilongjiang Province will have greater development space and a wider dissemination field.

(3) Reconstruction of the Artistic Aesthetic System

The emergence of encrypted cultural and creative products has led to the opening of a commercial and cultural gathering place in the tourism market, distinct from traditional cultural and tourism marketing spaces. This emerging culture reflects new visual symbols in the digital world, with art languages such as cyberpunk, pixel style, and symbolization gradually gaining prominence. A unique aesthetic system belonging to encrypted art is brewing, forming a "crypto aesthetic." Some consider this style to represent avant-garde and the future, while others see it as lacking artistic value and being symbolic trash. In any case, this aesthetic genre differs from traditional aesthetics and has not yet been fully embraced by the contemporary art world. The realization of its artistic value in the aesthetic field remains to be debated. However, its impact on the real world will continue to exist to some extent, and the artistic aesthetic system of the encrypted world will continue to influence the inheritance and development of traditional cultural arts. In the future, a visual symbol that combines encrypted art and traditional cultural and creative features may emerge, forming a new aesthetic trend accepted and recognized by both sides.

## 6. Conclusion

The design of ice and snow tourism cultural and creative products in Heilongjiang Province features distinct product images, profound cultural connotations, rich artistic value, and abundant technological content. It can well adapt to modern design needs and cater to new consumer concepts. These products have become the business card for promoting regional culture, deeply embedding the ice and snow culture of the northern cold regions into the hearts of contemporary audiences, and engraving it into the cultural memory of the Chinese people. The development and innovative design of ice and snow tourism encrypted cultural and creative

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products are in line with the pace of development in the information age, promoting the vigorous development of the digital economy, facilitating industrial restructuring, and holding significant importance for building a beautiful Heilongjiang. It has promoted the effective inheritance and innovative utilization of Heilongjiang's cold region cultural heritage resources and facilitated the prosperity and sustainable development of the economy and culture.

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