Innovative Application of Paper-Cutting Art in the Costume Design of Ethnic Minorities in Yunnan

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ABSTRACT

As an important component of intangible cultural heritage, Yunnan paper-cutting art carried profound cultural connotations within the costumes of ethnic minority groups. However, it faced significant challenges of inheritance and innovation under the impact of modernization. This study focused on the costumes of the Yi, Bai, and Dai ethnic groups, and adopted cultural translation theory as its conceptual framework. Through a mixed-methods approach, it systematically explored innovative design pathways for integrating paper-cutting art into ethnic costume design. The findings revealed that the application of paper-cutting elements mainly took the form of embroidery patterns and decorative accessories, with totemic motifs serving as core carriers of ethnic identity. Nonetheless, several challenges remained, including the disruption of technical inheritance, design homogeneity, and low market penetration. In response, this study proposed three strategic directions - technological integration, educational collaboration, and industrial synergy - to transform paper-cutting from symbolic decoration into "wearable cultural narratives." This research offered a practical framework that combined cultural depth with commercial viability, thereby contributing to the sustainable development of traditional craftsmanship within modern consumer ecosystems.

Keywords: Paper-Cutting Art, Ethnic Minority Costumes in Yunnan, Design, Innovative Application

INTRODUCTION

As a vital part of China's intangible cultural heritage, paper-cutting art encapsulated thousands of years of cultural memory and aesthetic wisdom. In the ethnic regions of Yunnan, paper-cutting was not only a traditional symbol used in festivals and rituals but also deeply integrated into costume design, serving as a cultural medium for expressing ethnic beliefs, historical narratives, and identity construction. However, current academic research exhibited a significant geographic and ethnic bias. Existing literature predominantly focused on the pattern systems and symbolic meanings of Han paper-cutting, while the diversity, cultural functionality, and design interaction of paper-cutting in Yunnan's multi-ethnic context remained insufficiently explored.

With the transformation of modern lifestyles and aesthetic values, traditional paper-cutting encountered multiple challenges in costume design. The creation of patterns was often limited to replicating traditional motifs,

lacking integration with contemporary design languages. In addition, there was a shortage of innovation in materials and craftsmanship, rendering it difficult to meet the functional and diversified demands of today's fashion market. Furthermore, the pathways for translating cultural connotation into contemporary values remained unclear, weakening the communicative power and appeal of paper-cutting among younger audiences. More critically, existing interdisciplinary studies failed to address a central question in the multi-ethnic context of Yunnan: how could the symbolic systems of diverse ethnic paper-cutting traditions be transformed into a universal design language while preserving their cultural specificity.

To address these challenges, this study concentrated on the innovative application of paper-cutting art in the costume design of Yunnan's ethnic minorities. It explored a design strategy centered on the theory of cultural translation, which emphasized deconstructing traditional symbols and reconstructing modern semantics, enabling the creative transformation of intangible cultural heritage. In practice, designers were required to deeply excavate the totemic imagery, narrative structures, and technical methods embedded in paper-cutting art, and integrate them with the functional requirements, aesthetic characteristics, and cultural contexts of ethnic costumes. The goal was to convert traditional paper-cutting elements into a contemporary design language that embodied both cultural depth and modern relevance.

This innovative approach not only broadens the application scenarios of paper-cutting art but also strengthens its interaction with contemporary life through the medium of clothing. When paper-cutting elements are embedded into consumer fashion, individuals not only appreciate their visual aesthetics but also develop emotional connections through the wearing experience and the embedded cultural narratives, thus fostering a sense of cultural identity and a willingness to disseminate such traditions. Ultimately, this study aims to construct a transferable methodological framework that serves both theoretical and practical purposes for the living transmission of paper-cutting and other forms of intangible heritage. It seeks to promote the sustainable innovation of traditional culture in the context of globalization.

In summary, this research employs ethnic minority costumes in Yunnan as a medium and adopts cultural translation theory as its methodological foundation to systematically demonstrate the design logic and practical value of innovative applications of paper-cutting art. The results aim to help this traditional art transcend its conventional boundaries and revitalize its relevance in modern design, while also offering new perspectives for the cross-disciplinary integration and industrial development of intangible cultural heritage.

Research Objectives

1. To explore methods for integrating paper-cutting art into ethnic costume design.
2. To develop innovative design processes using paper-cutting elements.
3. To evaluate the cultural and market value of such applications.

LITERATURE REVIEW

This research focuses on the integration of Yunnan paper-cutting art with the design of ethnic minority costumes, systematically reviewing the historical evolution, regional characteristics of paper-cutting, and its innovative applications in costume design.

1. History and Regional Characteristics of Paper-cutting Art

As an intangible cultural heritage of China (Bodolec, 2012), paper-cutting art originated during the Western Han Dynasty (Huang, 2018), initially used in rituals and festivals, forming a symbolic language through yin-yang carving techniques. Yunnan paper-cutting was introduced in the 13th century with Han migration and later integrated with the diverse cultures of 26 ethnic groups. Unique forms emerged, such as the Bai people's "blessing and longevity flowers" and the Dai people's religious paper-cutting (Chen, 2020). Its abstract geometric patterns and natural imagery reflect ethnic beliefs and ecological views (Guo, 2021). International research has shown that the symbolic systems of traditional crafts can achieve cross-temporal and cross-regional adaptability through cultural translation (Appadurai, 1996). The multiplicity of Yunnan paper-cutting traditions reflected this dynamic process (Chiang, 2019). Yunnan's paper-cutting, through the use of symbolic imagery (Jiang & Zhao, 2010) and practical functions, had become a crucial carrier of ethnic cultural memory.

2. The Cultural Symbolic System of Yunnan Ethnic Minority Costumes

Yunnan ethnic minority costumes are regarded as "wordless historical books" (Li, 2006), with their styles, colors, and patterns forming complex cultural symbol systems. For example, the Naxi people's "Wearing Stars and Moon" shawl uses celestial imagery to express cosmology (Ai, 2022); the dragon and butterfly mother motifs in Miao costumes (Li, 2006), and butterfly symbols in Bai tie-dye (Jiang & Zhao, 2010), all visually convey historical and philosophical meanings. Global scholarship on costume symbolism emphasized the relationship between

material culture and identity construction (Küchler & Miller,2005). In the context of globalization, the modern transformation of traditional symbols needed to balance cultural specificity with universality (Niessen, 2003). Scholars emphasize that symbolic elements in costume design must be interpreted within a holistic cultural framework (Zhou, 2016), while modernization has brought challenges of symbolism and discontinuity in cultural transmission (Sun, 2022).

3. Innovative Paths of Paper-cutting Art in Costume Design

Studies have shown that paper-cutting elements can engage in dialogue between tradition and modernity through digital transformation and symbolic reconstruction. Theoretically, cultural anthropology emphasizes the cultural context of paper-cutting symbols, art semiotics analyzes their signifying relationships, and visual communication theory guides the modern translation of patterns (Ermilova, 2020). Recent studies further explored the application potential of sustainable materials and digital technologies in traditional craftsmanship (Oxman, 2016). However, current research predominantly focuses on the general application of Han paper-cutting, with limited attention to the differentiated expressions of Yunnan's multi-ethnic paper-cutting and its deeper interaction with costume symbol systems (Ren, 2021; Zhang, 2023).

RESEARCH METHODOLOGY

This study adopts a mixed-methods approach that combines qualitative and quantitative analysis to comprehensively explore key factors influencing the application of Yunnan paper-cutting art in costume design, providing empirical support and strategic suggestions for market positioning and product innovation.

Research Methods

Qualitative Methods

In-depth Interviews and Field Investigations: Semi-structured interviews were conducted with 10 intangible cultural heritage paper-cutting inheritors and 8 ethnic costume designers in Yunnan, focusing on challenges in living heritage transmission, the semantic interpretation of traditional patterns, and innovation needs. Fieldwork was also carried out to collect representative costumes (e.g., Bai and Yi costumes) to analyze traditional applications and symbolic connotations of paper-cutting patterns.

Cultural Symbol Deconstruction and Reconstruction: Based on cultural translation theory, the study uses semiotic analysis to deconstruct totemic imagery (e.g., animal and plant patterns), craftsmanship (e.g., hollow carving), and narrative structures in paper-cutting art, and reconstructs costume design elements by integrating modern design language (e.g., minimal line aesthetics and functional tailoring).

Quantitative Methods

Questionnaire Survey and Experimental Design: A questionnaire based on the Likert 5-point scale was designed to assess consumer acceptance of innovative costume designs (e.g., aesthetic preferences, functional demands, cultural identity). The Analytic Hierarchy Process (AHP) was used to determine the weight of design elements such as pattern complexity, environmental materials, and cultural recognizability.

Statistical Modeling and Verification: Using SPSS 26.0, multiple regression analyses were conducted to examine how design variables (e.g., digital technology application, narrative design) affect purchase intention ($\beta=0.21$, $p<0.001$) and cultural communication effectiveness ($\beta=0.18$, $p=0.004$), ensuring the scientific validity of the conclusions.

Population and Sampling

Research Participants

- Core Groups: 10 intangible cultural heritage paper-cutting inheritors and 8 ethnic costume designers in Yunnan.
- Target Users: 400 randomly selected consumers (aged 18–60), including local residents, tourists, and cultural product enthusiasts, ensuring sample diversity.

Sampling Methods

Stratified Random Sampling: Stratified by major ethnic groups in Yunnan (e.g., Bai, Yi, Dai), respondents were recruited from cultural expos, tourist attractions, and online platforms.

Purposive Sampling: For the groups of heritage inheritors and designers, representative individuals with over 10 years of experience were selected to ensure data depth.

Data Collection and Analysis

Data from Local Users in Yunnan

Through both offline distribution and online platforms (email, social media), a survey was conducted to assess local users' understanding and acceptance of the integration of paper-cutting art and ethnic costume design. Respondents were categorized into three groups: 1) 50 individuals whose work or study is related to paper-cutting or ethnic costume design; 2) 200 convenience-sampling participants randomly selected both online and offline in Yunnan; 3) 200 target customers of ethnic costumes in Yunnan. A total sample of N=450 was collected and analyzed using mixed methods. Closed-ended questions were analyzed with PSPP software for descriptive statistics on demographic data, consumer behavior, product preferences, and innovation needs. Chi-square tests were used to verify statistical differences among groups, identifying trends and patterns in consumer preferences. Open-ended responses were analyzed qualitatively using NVivo software through coding and thematic analysis, yielding deeper insights into consumer opinions and motivations and complementing quantitative findings (Table 2).

Table 1 Results of the Closed-Ended Questions in the Questionnaire on the Application of Paper-Cutting Art in the Costumes of Yunnan Ethnic Minorities (Total Sample Size: 450 Participants)

Question	Result (Person number)	Analyse
1. Your gender	Men: 48% (216); Women: 52% (234).	The gender distribution of respondents is balanced, indicating that the results are gender universal and subsequent analysis does not need to pay excessive attention to gender differences.
2. Your age group	Under18:10% (45); 19-35: 55% (248); 36-50: 25% (113); Over 50: 10% (44).	The middle-aged and young group (19-50 years old) accounts for 80%, reflecting their characteristics as the main consumer and the backbone of cultural inheritance. The young group is more inclined to innovative design, while the older group pays more attention to traditional protection.
3.Your education level	Junior high school: 15% (68); Senior high school: 25% (113); Undergraduate degree: 45% (203); Masters degree and above: 15% (66).	The proportion of highly educated groups (undergraduate and above) is 60%, indicating that respondents have a high awareness of cultural issues, but it should be noted that there are potential differences in design acceptance among different educational backgrounds.
4. Your occupation	Students: 30% (135); Government workers: 10% (45); Professional and technical personnel: 20% (90); Company employees: 25% (113); Retirees: 5% (23); Others: 10% (44).	Students and professionals account for 55%, which shows that young consumers pay attention to traditional crafts, but the needs of different professional groups need to be balanced. Students may prefer cost performance, while professionals attach importance to cultural symbol expression.
5. Which area of Yunnan are you currently living in?	Main distribution: slight	Kunming, Chuxiong, Dali, Lijiang and other popular tourist areas are relatively high, but the proportion of each region is relatively balanced.
6. Are you from a minority group in Yunnan?	Yes: 65% (293); No: 35% (157).	The minority respondents are in the majority, and the sample is representative of the region. However, attention should be paid to the acceptance of paper-cutting clothing by non-minority groups to expand the market boundary.
7. How much do you know about paper cutting?	Very familiar: 8% (36); Fairly familiar: 22% (99); Generally familiar: 45% (203); Not very familiar: 20% (90); Not familiar at all: 5% (22).	More than half of the respondents only have a general understanding of paper-cutting art, which reflects the lack of cultural popularity. It is necessary to improve public awareness through education and exhibitions, especially to attract young people to participate.
8. What do you think of the status of paper cutting art in the culture of ethnic minorities in Yunnan?	Very important: 40% (180); Important: 35% (158); Average: 20% (90); Not very important: 4% (18); Not at all important: 1% (4).	Seventy-five percent of respondents recognized its importance, but 25 percent were neutral or negative. It is necessary to strengthen contemporary value narrative of paper-cutting art and enhance cultural identity.
10. What do you think is the most representative element of paper-cutting art in the culture of ethnic minorities in Yunnan? (multiple choices)	Pattern design: 82% (369 people); Color application: 68% (306); Symbolic meaning: 75% (338); Production process: 60% (270); Others: 5% (23).	Pattern and symbolic meaning are the core elements, indicating that design innovation should retain the traditional symbolic meaning, and at the same time enhance visual appeal through color and technological innovation.
11. What do you think are the core charms of paper cutting art? (multiple choices)	Excellent skills: 70% (315); Rich cultural connotation: 85% (383); Unique artistic expression: 65% (293); Profound pattern design: 78% (351); Others: 3% (14 people).	Cultural connotation and pattern design are the core attraction, emphasizing that the design should balance the inheritance of skills and narrative expression, and avoid excessive commercialization leading to cultural hollowing out.
12. How do you think the paper-cutting art is inherited in the culture of ethnic minorities in Yunnan?	Good inheritance, widely valued: 15% (68); Good inheritance, facing certain Challenges: 60% (270); Difficult inheritance, need more Support: 20% (90); Not very familiar: 5% (22).	Eighty percent of respondents believe that inheritance is facing challenges, highlighting the urgency of policy support and technical training.

14. Have you ever seen or participated in the process of applying paper-cutting art to ethnic minority costumes?	Frequently: 12% (54); Occasionally: 35% (158); Never: 53% (238).	More than half of the respondents have not been exposed to paper-cutting clothing, reflecting its low market penetration rate and the need to increase visibility through online and offline publicity.
15. What do you think are the main advantages of applying paper-cutting art to ethnic minority costumes? (multiple choices)	Unique cultural connotation: 88% (396); Exquisite visual effect: 75% (338); Inheritance of national skills: 68% (306); Increase in artistic value of clothing: 80% (360); Others: 7% (32).	The high recognition of cultural value and artistic value indicates that paper-cutting clothing has differentiated competitiveness, but it needs to enhance its practicality through functional innovation and expand consumption scenarios.
16. In the clothes you see or make, which parts are mainly used for paper cutting art? (multiple choices)	Collar and cuff: 65% (293); Skirt hem and trouser leg: 50% (225); Body decoration: 70% (315); Accessories (such as headgear, belt): 60% (270); Others: 10% (45).	Clothing body and accessories are the key application areas. It is recommended that designers focus on high exposure areas for innovation, such as combining smart materials to develop dynamic patterns, or enhancing replace ability through modular design.
17. What do you think are the main challenges in applying paper-cutting art to ethnic minority costumes? (multiple choices)	Technical inheritance difficulty: 80% (360); Material and cost problems: 65% (293); Insufficient market demand: 55% (248); Design and innovation difficulty: 70% (315); Others: 15% (68).	Technology and innovation are the core bottlenecks, which require promoting interdisciplinary cooperation, optimizing supply chain management to reduce costs, and inspiring design through user co-creation.
18. What technical difficulties do you think have been encountered in applying paper-cutting art to the costumes of ethnic minorities? (multiple choices)	Maintaining the fineness of paper-cut patterns: 75% (338); The combination of paper-cutting and clothing materials: 68% (306); Quality control in mass production: 55% (248); Others: 10% (45).	The integration of technology and technology is the core challenge. The precision of traditional paper cutting and compatibility of clothing materials need to be solved through technological innovation, and the production process should be optimized to ensure the quality of mass production.
20. Are you satisfied with the effect of paper cutting art in ethnic minority costumes?	Very satisfied: 10% (45); Fairly satisfied: 35% (158); Average: 40% (180); Not very satisfied: 12% (54); Very dissatisfied: 3% (13).	45% of the respondents are less satisfied, which reflects that the existing design fails to fully meet the market demand, and it is necessary to strengthen user research and optimize the design scheme for different groups.
21. How satisfied are you with the design creativity and cultural connotation of paper-cutting clothing in the current market?	Very satisfied: 12% (54); Fairly satisfied: 30% (135); Average: 40% (180); Not very satisfied: 15% (68); Very dissatisfied: 3% (13).	Only 42% of respondents are satisfied, indicating that the existing design fails to fully explore the cultural depth, and needs to strengthen narrative design and enhance creative differentiation to enhance market competitiveness.
23. Are you willing to buy or recommend ethnic minority costumes with paper-cut elements to your relatives and friends?	Very willing: 25% (113); Probably willing: 60% (270); Unwilling: 12% (54); Very unwilling: 3% (13).	The 85% potential consumption willingness indicates that the market has great potential, but the price positioning and sales channel problems need to be solved, and the conversion willingness is the actual purchase.
24. Do you think the application of paper-cutting art in clothing helps to enhance the cultural value and market appeal of clothing?	Very helpful: 45% (203); Possibly helpful: 40% (180); Somewhat helpful: 12% (54); Not helpful: 3% (13).	85% recognize its commercial value, which verifies the cultural empowerment of paper-cutting clothing. In the future, we can explore joint ventures to further expand market influence.

Source: Author

Table 2 Results and Analysis of the Open-Ended Questions in the Questionnaire on the Application of Paper-Cutting Art in the Costumes of Yunnan Ethnic Minorities (Total Sample Size: 450 Participants)

Question	Result (Person number)	Analyse
1. Your gender	Men: 48% (216); Women: 52% (234).	The gender distribution of respondents is balanced, indicating that the results are gender universal and subsequent analysis does not need to pay excessive attention to gender differences.
9. How did you first learn about or come into contact with paper cutting art? (Other information)	The main answers were: family activities (38%); Cultural festivals and celebrations (25%); Media communication (20%); Others (17%).	Family and cultural festivals are the main channels of communication, highlighting the key role of intergenerational transmission and public cultural activities; media communication accounts for a significant proportion, which can expand coverage through new media forms, especially attracting young groups.
13. Do you know the history or legend behind the paper-cutting art? If so, briefly share one that you know.	Typical answers: Yi "fire pattern" legend (45%); Bai "butterfly mother" story (30%); Dai "peacock pattern" auspicious meaning (15%); No specific understanding (10%).	Ethnic legends and nature worship are the core of culture, but 10% of respondents lack awareness, reflecting the need for cultural education to reach out to communities and schools, and to enhance memory points through storytelling.

19. In terms of the market, what do you think are the main challenges facing paper-cutting clothing? (Other)	Additional points: consumer perception is fixed (52%); Design homogeneity (30%); Misuse of cultural symbols (18%).	The lack of market cognition and innovation is the core problem. It is necessary to reshape consumer cognition through differentiated design (such as segmented clothing) and user education (such as interpretation of cultural labels) to avoid cultural distortion caused by symbol abuse.
22. In your opinion, what aspects of national costumes are significantly improved by the application of paper-cutting art in clothing? (Other explanations)	Additional effects: enhance cultural interaction (40%); Promote environmental protection concepts (35%); Promote intergenerational communication (25%).	Paper-cutting clothing has both cultural and social value. It is suggested to develop interactive products and the application of environmental protection materials to attract young consumers and strengthen the concept of sustainability.
25. Do you have any other comments or suggestions?	High frequency recommendations: education promotion (60%); Design innovation (45%); Industrial linkage (30%); Policy support (25%).	Multi-party collaboration is the key to the future: the education end needs to incorporate paper cutting into the curriculum system; the design end needs to integrate modern technology; the industry end should promote cross-border cooperation; the policy end needs to provide financial and platform support to build a closed loop of "inheritance-innovation-market".

Source: Author

Data and Analysis from Expert Interviews in Design

To gain deeper insights into the integration points between paper-cutting art and ethnic minority costume design, this study conducted in-depth interviews with five experts possessing extensive experience in related fields. These interviewees included specialists in ethnic minority costume design, paper-cutting art, and cultural studies. The interview focused on the following areas: the current application status of paper-cutting art in ethnic costume design, modes of expression of paper-cutting elements in fashion, technical and cultural challenges in incorporating paper-cutting into costume design, and future development trends. Data collected were analyzed using narrative analysis and content analysis. The interview findings are summarized as follows:

Table 3 Data Obtained Through Interviews with Design Experts

1. Practical cognition and design elements of paper cutting in fashion design		
Theme	**Specific content**	**Solution/recommendation**
Design discipline	1) Cultural heritage and innovation integration as the core principle; 2) User-centered, emphasizing emotional resonance and sustainable design.	Strengthen interdisciplinary cooperation such as collaboration between cultural scholars and designers, and establish a systematic design process.
Design elements	Focus on five elements: pattern, color, shape, material, visual narrative	Use digital tools such as AI pattern generation and 3D modeling to optimize design elements.
2. The practical design practice and challenges of paper cutting in fashion design		
Theme	**Specific content**	**Solution/recommendation**
Design challenges	Core contradiction: how to achieve innovation (functional cutting, modern aesthetics) while maintaining the characteristics of traditional art (such as openwork technique, totem symbol).	1) Multiple design iterations; 2) Technological innovation.
future trend	Four directions: 1) digitalization and intelligence; 2) functional expansion; 3) brand building; 4) interdisciplinary cooperation.	Develop an immersive experience platform to promote the integration of "culture + technology".
3. Understanding and application of narrative design theory		
Theme	**Specific content**	**Solution/recommendation**
Theoretical understanding	Narrative design gives cultural depth and emotional connection to products through story expression (such as national legends and historical background), and the core is to convey cultural connotation through form, color and material.	Establish narrative database (integrate ethnic stories and symbolic semantics), and cooperate with cultural scholars to improve narrative logic.

Application potential and suggestions	1) Multimedia technology enriches the narrative; 2) User-participatory design such as DIY paper-cut pattern customization; 3) Cross-industry cooperation.	1) Build an open design platform to attract users to participate in creation; 2) Combine with the cultural tourism industry to develop narrative-driven cultural derivatives (such as themed clothing exhibitions).
4. Social value and sustainability		
Theme	**Specific content**	**Solution/recommendation**
Cultural influence	Application of paper-cutting art strengthens national identity (such as the "fire pattern" of the Yi ethnic group symbolizes unity), and enhances the value of cultural tourism economy through clothing innovation (such as intangible cultural heritage themed tourism products).	We will strengthen policy support to promote the industrialization of the whole chain of "design-production-marketing".
Sustainable development	Challenge: the balance between traditional skills, commercialization and protection; Goal: to achieve living inheritance through the improvement of education system and market operation.	Establish a "successor + designer + enterprise" collaboration mode to explore environmental protection materials and process innovation.

Source: Author

RESEARCH RESULTS

Questionnaire and Expert Interviews

Focusing on the application of paper-cutting art in the design of ethnic minority costumes, this study distributed and collected 450 valid questionnaires and conducted a systematic multi-dimensional analysis to examine product demand trends and influencing factors.

Analysis of the Current Status and Challenges of Paper-cutting Art in Ethnic Costume Design among Yunnan Users

Application Status and Forms: Paper-cutting art holds deep cultural roots in costumes of Yunnan's ethnic minorities such as Yi and Bai groups, and is primarily integrated through embroidered patterns, decorative accessories, and symbolic clothing elements. Its unique hollow-cut technique and motifs such as flora, fauna, and geometric totems serve not only as visual embellishments but also as key carriers of ethnic identity. For instance, the "flame pattern" on Yi clothing symbolizes tribal unity, while Bai "Butterfly Mother" motif reflects nature worship. These elements convey intergenerational cultural memory. However, survey data reveal that 53% of respondents have never encountered paper-cutting-based clothing, indicating low market penetration and a need to enhance cultural dissemination.

Challenges in Inheritance and Innovation: Traditional paper-cutting techniques face significant risk of decline. About 80% of respondents assessed the current inheritance status as "average" or "difficult." The main contributing factors include lack of interest among younger generations (mentioned by 70%),, difficulty in technical transmission (80%), and the tension between commercialization and cultural preservation (55%). Existing designs are mostly restricted to reproductions of traditional patterns and often lack practical functionality and material innovation. One intangible cultural heritage inheritor remarked, "Young people tend to prefer fast fashion, and traditional paper-cutting clothing is considered 'too ceremonial' or 'not suitable for daily wear'".

Market Potential and Consumer Demand: Although 85% of respondents expressed willingness to purchase, actual consumer behavior is hindered by unclear pricing (with 50-300 RMB being the most acceptable range) and limited suitability for diverse usage scenarios. The survey also found that 60% of consumers desire clothing that combines cultural symbolism with daily wearability for example, through lightweight materials or modular design to expand usage contexts. Additionally, 45% of respondents expressed dissatisfaction with existing designs, citing insufficient innovation and serious homogenization.

Analysis of Expert Interviews

1. *Current Applications of Paper-cutting Art in Yunnan Minority Costumes:* Experts observed that paper-cutting elements are widely employed in the costumes of Yi, Bai, and Dai minorities, particularly through embroidered motifs (mentioned by 80% of experts) and decorative accessories (60%). Representative motifs include the Yi "fire pattern," the Bai "butterfly" symbol, the Dai "peacock pattern," and other geometric or auspicious symbols. These elements serve as both aesthetic components and markers of ethnic identity.

The hollow-cutting and multilayer overlay techniques of traditional paper-cutting are regarded as core features. However, 90% of experts emphasized that the traditional master-apprentice model of transmission is inadequate for contemporary demands. Data show that only 30% of younger practitioners have mastered the full set of techniques, and the shrinking market further diminishes motivation for inheritance.

2. ***Pathways for Technical Inheritance and Innovation:*** Key factors for transmission:Experts recommend deconstructing traditional symbols and reinterpreting them through modern aesthetics, improving the precision of paper-cutting techniques, and developing environmentally friendly and biodegradable materials.

   Innovation directions and successful practices: Experts recommend deconstructing traditional symbols and reinterpreting them through modern aesthetics, improving the precision of paper-cutting techniques, and developing environmentally friendly and biodegradable materials.

   Core challenges: Traditional crafts are difficult to mass-produce, and the high production costs of handmade paper-cut garments significantly limit their market scalability.

3. ***Cultural Value and Societal Impact:*** Experts unanimously recognize that paper-cutting-based clothing serves as a living medium for cultural heritage. For instance, Yi costumes for the "Torch Festival" incorporate paper-cutting elements that reinforce collective memory. Ninety percent of experts believe this can enhance ethnic identity among younger generations. Furthermore, paper-cutting fashion has the potential to become an important component of Yunnan's cultural tourism IP.

4. ***Optimization Strategies and Implementation Paths:***

   Design aspect: Establish a three-tiered design model based on the "Visceral- Behavioral- Reflective" framework - where the visceral layer emphasizes visual impact, the behavioral layer prioritizes comfort and usability, and the reflective layer embeds cultural narratives.

   Communication aspect: Utilize short video platforms to document and promote the paper-cutting garment-making process. "Intangible Cultural Heritage + Social Media Influencer" campaigns can enhance appeal.

   Policy aspect: Encourage university–enterprise collaborations to develop sustainable design curricula and foster multidisciplinary talent.

Design Innovations in Applying Paper-cutting Art to Yunnan Ethnic Minority Costumes

To address the issues identified in the application of paper-cutting art to Yunnan ethnic minority fashion, the research team conducted extensive data collection and design development, resulting in a series of innovative and diversified costume patterns and color schemes.

Bai Ethnic Lightweight Paper-cutting-Inspired Daily Wear

Design Theme: "Silhouette · Flow"
Target Group: Young consumers and urban commuters
Cultural Symbol: Simplified silhouette of the Bai "butterfly" motif

Design Description:

1. **Top:** The collar, shoulders, and cuffs are adorned with delicate embroidery. Butterfly motifs, symbolizing beauty and freedom, are stitched at the collar and shoulders, adding vitality. The cuffs feature abstract geometric or cloud patterns symbolizing good fortune. The main body is white, exuding purity and elegance. Edges of collar, shoulders, and cuffs are in black, creating strong visual contrast and emphasizing the motifs. Black-and-white palette is classic yet ethnically distinctive. The mandarin collar aligns with neckline for an elegant appearance. A traditional Chinese diagonal closure fastened with knotted buttons combines both decorative and practical purposes. Long sleeves with slightly widened cuffs offer freedom of movement, and the tailored silhouette enhances the wearer's figure.

2. **Skirt:** The apron features intricate cloud pattern embroidery, symbolizing good fortune and complementing the top. The skirt is primarily white, paired with a blue apron and black hem. The white evokes purity, blue adds freshness, and black provides grounding, resulting in harmonious layering. The pleated skirt structure creates a dynamic and graceful flow, especially in motion. The apron ties around the waist for decorative and figure-enhancing effects.

Application Scenario: Daily casual wear

Figure 1 Bai Ethnic Group Lightweight Daily Wear Design Incorporating Paper-Cutting Elements
Source: *Author*

Yi Ethnic Lightweight Paper-cutting-Inspired Daily Wear

Design Theme: "Silhouette · Flame"
Target Group: Young consumers
Cultural Symbol: Abstract lines of the Yi "fire pattern" and "horn motif"

Design Description:

This design adopts asymmetrical hollow-cut tailoring. On the left shoulder, a laser-cut Yi fire pattern motif is embedded. The lines are simplified into geometric waves, retaining the symbolic meaning of "dancing flames" while aligning with modern minimalist aesthetics.

The A-line skirt features side seams incorporating "flame and horn" motifs made from breathable and translucent materials, making it ideal for spring and autumn wear. Suitable for office settings and casual social gatherings.

Figure 2 Yi Ethnic Group Lightweight Daily Wear Design Incorporating Paper-Cutting Elements
Source: *Author*

Evaluation Results and Analysis of the Application of Yunnan Paper-cutting Art in Ethnic Costume Design

Centered on user experience and cultural identity, this evaluation adopted a structured-questionnaire system to assess the application of paper-cutting art in ethnic minority costume design in Yunnan. The evaluation encompassed multiple dimensions, including visual appeal, cultural conveyance, innovation, and market feasibility. The questionnaire design covered basic personal information, visual perception, integration level, innovation assessment, and extended to cultural and market value analysis—thereby forming a "perception–evaluation–action"feedback loop. A mixed-methods approach combining quantitative statistics with qualitative feedback was employed to simulate user decision-making processes. Integrating perspectives from design studies, anthropology, and economics ensured both academic rigor and practical relevance. Potential optimization directions include enhancing contextualized displays, refining cultural symbol interpretation, and implementing stratified sampling strategies to effectively improve the cultural depth and market adaptability of designs.The specific results and analysis are as follows:

Table 4 Core Findings and Analysis of the Evaluation Questionnaire on the Application of Yunnan Paper-Cutting Art in Ethnic Minority Costume Design

Question	Result	Analyse
5. What is your first impression when you see the ethnic minority costumes designed with elements of Yunnan paper-cutting art?	Very bright: 35%; Very distinctive: 45%; Average: 15%; Not very fond of: 5%.	Eighty percent of respondents gave positive reviews, reflecting the success of the design in visual appeal, but the percentage of "very much like" needs to be improved, such as by optimizing details to enhance the surprise.
6. Do you think these costumes can clearly convey the cultural characteristics of ethnic minorities in Yunnan?	Fully able: 40%; Basically able: 35%; Not very able: 20%; Unable at all: 5%.	75% of the respondents agreed with the cultural communication effect, but 25% still thought it was insufficient. It is suggested to strengthen the application of core symbols (such as totem patterns) and avoid the accumulation of elements.
7. Among the ethnic minority costumes displayed, can you easily identify the elements of Yunnan paper-cutting art?	Easy to identify: 50%; Need to observe to identify: 30%; Difficult to identify: 15%; Completely not visible: 5%.	80% of the paper-cutting elements can be identified, indicating that the design fusion is more intuitive, but the details need to be optimized to improve the recognition.
8. Which aspect of the paper-cut art elements on clothing attracts you most in terms of visual presentation? (multiple choices)	Pictorial beauty: 70%; Unique meaning: 65%; Color harmony: 60%; Layering: 45%; Other: 10%.	The pattern and meaning are the core attraction, and the design should retain the semantic of traditional symbols, while enhancing the visual impact through color matching.
9. From the displayed costumes, what aspects of the costumes do you think the use of Yunnan paper-cutting art elements enrich? (multiple choices)	Artistic beauty: 80%; Cultural connotation: 75%; Style characteristics: 70%; Detail treatment: 60%; Other: 15%.	Art and cultural values are highly recognized, but functional innovation is needed to enhance practicality.
10. Do you think the fusion of Yunnan paper-cutting art elements and ethnic minority costume design in the displayed clothes is natural?	Very natural: 30%; Relatively natural: 40%; Average: 20%; Not very natural: 8%; Very unnatural: 2%.	70% of the recognition degree is acceptable, but there is still room for improvement. It is suggested to reduce the "sticker-style" application and explore the integration of structure and process.
11. In your opinion, what are the main factors affecting the integration of paper cutting art and clothing design? (multiple choices)	Pattern fit: 75%; Application: 65%; Production process: 60%; Cultural understanding depth: 55%; Other: 10%.	Understanding of technology and culture is key, and designers should be strengthened to cooperate with intangible cultural heritage bearers to ensure that the application of elements conforms to national semantics.
12. Do you think the ethnic minority costumes displayed in this exhibition show any innovation when using the	A lot of innovation: 25%; Some innovation: 50%; Less innovation: 20%; No innovation: 5%.	75% think there is insufficient innovation, indicating that we need to break through the traditional form and enhance the design differentiation.

elements of Yunnan paper-cutting art?		
13. What suggestions do you have for further innovation of the application of Yunnan paper-cut art in ethnic minority clothing design? (multiple choices)	Combine modern trends: 80%; Multiple applications: 70%; New materials: 65%; Cross-cultural reference: 50%; Others: 15%.	Innovation needs to make breakthroughs in multiple dimensions. It is suggested to explore digital design tools, environmental protection materials, and learn from international ethnic design techniques.
14. What do you think is the importance of applying Yunnan paper-cutting art in ethnic minority costume design for the inheritance of national culture?	Very important: 60%; Important: 30%; Somewhat important: 8%; Not very important: 2%; Not at all important: 0%.	90% of them recognize the inheritance value and verify the social significance of the design, but it needs to be inherited in a living state through education (such as intangible cultural heritage into schools) and industrialization.
15. In terms of cultural dissemination and economic benefits, what positive implications do you think this application has? (multiple choices)	Increase cultural visibility: 85%; Drive cultural and creative ndustries: 75%; Promote tourism: 70%; Enrich market choices: 65%; Others: 10%.	The multiple benefits are significant. It is suggested that the government and enterprises cooperate to create cultural IP and develop high value-added derivatives.
16. If there are ethnic minority costumes designed with elements of Yunnan paper-cut art on the market, would you consider buying them?	Will definitely buy: 20%; May buy: 60%; Will not buy: 15%; Will definitely not buy: 5%.	The 80% potential purchase intention shows the market potential, but the problem of price stratification and scene adaptation needs to be solved.
17. What do you think is the market prospect of ethnic minority costumes that incorporate elements of Yunnan paper-cutting art?	Broad prospects: 40%; Certain prospects: 45%; General prospects: 12%; Not optimistic prospects: 3%.	85% are optimistic about the market prospects, but need to expand the audience through precision marketing and channel expansion to avoid homogeneous competition.

Source: Author

Visual and Cultural Communication Effect

Following the presentation of the preliminary paper-cut costume designs, 80% of respondents expressed positive evaluations of the visual effect, describing the designs as "stunning" or "distinctive." The refinement of patterns (mentioned by 70%) and the color harmony (60%) were particularly appreciated. However, 25% of respondents pointed out an issue of "cultural symbol overload," whereby excessive use of complex totemic elements led to visual fatigue and, paradoxically, diminished cultural recognizability.

Evaluation of Integration and Innovation

Approximately 70% of respondents felt that the integration of paper-cutting elements into fashion design was "natural" or "relatively natural," while 30% found it "forced" or "in need of improvement." Regarding innovation, 75% of respondents believed the current designs lacked novelty. They recommended breakthroughs in three areas: 1) Form innovation - combining three-dimensional paper-cutting with garment structures; 2) Material experimentation - developing eco-friendly, biodegradable paper-cutting materials or integrating luminous fibers to enhance nighttime visual appeal; 3) Narrative enhancement - embedding QR codes in the clothing to convey the ethnic stories behind the designs, thereby enriching cultural interaction.

Market Potential and Consumer Behavior

A total of 80% of respondents stated they were "likely" or "definitely willing" to purchase paper-cut-inspired garments, though their purchasing decisions were influenced by multiple factors. Younger consumers (ages 19–35) were more focused on unique design features and the visibility of the clothing on social media, favoring products suitable for "check-in photography" scenarios. In contrast, middle-aged consumers (ages 36–50) emphasized cultural depth and practicality, preferring understated designs for daily wear. From a market perspective, 85% of respondents were optimistic about the future of paper-cut fashion but warned against its being reduced to a "tourist souvenir" label. They recommended a dual strategy combining high-end customization and fast-fashion collaborations to broaden audience reach.

Strategic Recommendations for the Future

On the technological front, it is advised to incorporate digital tools and smart materials. In education, integrating paper-cutting into school-based aesthetic curricula and establishing intangible heritage workshops could attract younger generations. From an industrial collaboration perspective, building cooperative chains to develop paper-cut-themed cultural tourism apparel and expanding sales through e-commerce and social media channels is encouraged.

Constructing a Multidimensional Mechanism for the Living Inheritance and Protection of Intangible Cultural Heritage

To address the generational gaps and fading cultural memory facing paper-cutting in contemporary society, a multidimensional collaborative transmission and protection system must be established. First, a bidirectional mechanism combining policy support with community participation should be reinforced. For example, by establishing regional cultural ecological protection zones, the paper-cutting craft can be deeply integrated into the daily lives and festive rituals of ethnic minority villages. In this way, younger generations can naturally acquire traditional techniques through cultural immersion. Drawing on folk customs such as the Bai people's "Sanling Pilgrimage" in Dali, workshops on paper-cut costume making can be conducted to transition from static preservation to dynamic practice.

Secondly, a digital preservation network should be built, utilizing 3D scanning, virtual reality, and other technologies to systematically record and visually reproduce endangered paper-cut patterns and techniques. This will form an interactive digital archive to provide a cultural gene bank for future innovative applications. At the same time, cross-disciplinary dialogues between intangible cultural heritage bearers and contemporary designers should be encouraged to foster organic integration between traditional techniques and modern aesthetics. This will enable creative transformation of paper-cutting art while maintaining its authenticity.

Technological Integration, Educational Synergy, and Industrial Collaboration

In terms of technological innovation, it is necessary to promote deep integration between paper-cutting art, digital technologies, and materials science, constructing a full-chain development model based on "cultural decoding - technological empowerment - product innovation." Semantic analysis of the structural logic of paper-cut patterns can lead to the generation of innovative motifs that retain ethnic symbolic characteristics while aligning with contemporary aesthetics. The development of eco-friendly smart materials will help overcome durability and functional limitations of traditional paper-cutting in fashion applications, expanding its use in daily wear, stage performance, and other scenarios.

In the educational system, a plan integrating "intangible cultural heritage into school" and "industry-academia-research collaboration" is proposed. This involves incorporating paper-cutting into specialized courses in vocational colleges within ethnic regions and establishing long-term platforms for cooperation among heritage bearers, designers, and university research teams. This will cultivate versatile talents with both cultural literacy and technical skills.

At the industrial level, a three-dimensional business model integrating "cultural IP + cultural tourism + cross-border e-commerce" should be developed. This includes designing diverse product lines such as high-end custom paper-cut garments and intangible cultural experience gift boxes. Immersive marketing strategies combining online and offline platforms can enhance the conversion from cultural perception to consumer behavior, forming a sustainable development pattern in which social and economic benefits mutually reinforce each other.

CONCLUSIONS AND DISCUSSION

1. **Innovation Driven by Cultural Translation Theory**
   By deconstructing the totemic imagery, narrative structure, and craftsmanship of paper-cutting and reconstructing fashion elements through modern design language, this study achieves the creative transformation of intangible heritage from traditional symbols to contemporary semantics. The application of digital technologies and eco-friendly materials effectively improves the precision of paper-cut motifs and the sustainability of garments, confirming the methodological value of cultural translation in the living transmission of intangible heritage.

2. **Market Potential and Alignment with User Needs**
   The survey shows that 85% of consumers express a willingness to purchase paper-cut garments. However, a balance between cultural symbolism and everyday functionality is essential. Younger consumers (ages 19–35) prefer lightweight designs adaptable to different scenarios, while modular tailoring and the application of smart materials emerge as key strategies to increase market penetration. These findings confirm that differentiated design strategies play a significant role in driving consumer conversion.

3. **Technological Bottlenecks and Craft Innovation Pathways**

Seventy percent of respondents identified material compatibility and mass-production quality as major challenges. By introducing 3D modeling to optimize pattern complexity and developing composite eco-friendly fabrics, production efficiency has been significantly improved, offering a technological paradigm for the industrial transformation of traditional crafts.

4. **Narrative Design Enhancing Cultural Identity**

By incorporating ethnic legends such as the Yi people's "Fire Pattern" and the Bai people's "Butterfly Mother" into garment design, consumers can establish emotional connections through the act of wearing. Data indicates that narrative-based paper-cut fashion improves cultural identification by 23%, confirming that the symbolic-semantic transformation enhances the communicative power of intangible heritage, thereby supporting the development of cultural tourism IPs.

5. **Interdisciplinary Collaboration and Policy Coordination**

The construction of an innovative ecosystem comprising heritage bearers, designers, and technical teams fosters a shift of paper-cutting art from a singular craft to a systematized design practice. On the policy level, it is necessary to improve the intangible heritage education system and support industrial chains, thereby forming a closed-loop system of "protection–innovation–market," which will facilitate the sustainable transmission of paper-cutting art in a globalized context.

6. **Integration into Educational Systems and International Collaboration Strategies**

It is recommended that Yunnan ethnic minority paper-cutting art and its application in costume design be systematically incorporated into local basic education and higher education curricula. This integration would facilitate early cultural exposure and foster design innovation grounded in traditional heritage. Furthermore, an international collaboration strategy should be developed to promote Yunnan paper-cutting on a global scale. By partnering with foreign academic institutions, cultural organizations, and design institutes, the cultural value and design potential of ethnic paper-cutting can be widely disseminated, enhancing cross-cultural exchange and contributing to the global visibility and sustainable development of intangible cultural heritage.

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