

Research on the Innovation of Creative Expression and Communication Practice of Folk Dances of Ethnic Minorities in Southwest China Empowered by Digital Media

Shuai Zhao¹

¹College of Performing Arts, Geely University of China, Chengdu 610000, Sichuan, China

Corresponding author: Shuai Zhao (e-mail: 18280330618@163.com)

ABSTRACT Taking digital media empowerment as the core perspective, this paper systematically explores the integration mechanism between digital media, folk dances, and traditional textile crafts of ethnic minorities in Southwest China to preserve the multidimensional cultural identity of these regions. The research finds that digital media has realized the expansion of themes, the breakthrough of expression forms and the diversification of creative subjects in creative expression, achieving the digital representation of traditional dances through technologies such as motion capture and 3D modeling. In communication practice, it has constructed a diversified channel network, promoting the popularization of communication subjects, the interaction of communication modes and the precision of communication strategies. Meanwhile, the process of digital empowerment still faces problems such as the imbalance between technology and art, the homogenization of content, the uneven regional development and the shortage of professional talents. Based on this, the paper puts forward optimization paths including adhering to cultural core, strengthening content innovation, improving digital infrastructure, enhancing talent training, and systematically documenting inheritors' skills through digital means to provide theoretical reference and practical guidance for the living inheritance and contemporary development of ethnic folk dances and traditional textile craftsmanship in Southwest China.

INDEX TERMS digital media, folk dances of ethnic minorities in Southwest China, creative innovation, communication practice, textile craftsmanship

I. INTRODUCTION

A. RESEARCH BACKGROUND AND PROBLEM PROPOSAL

1) The Transformation of Cultural Communication in the Digital Media Era

DIGITAL media technology such as artificial intelligence and virtual reality are reshaping cultural communication. They also provide new pathways for the inheritance of traditional culture [1]. With the help of internet platforms and various digital devices, the communication mode of excellent culture has upgraded from one-way output to two-way interaction, and the communication scope has broken through the limitations of region and time, forming a new pattern of cultural communication with universal participation and full coverage [2]. This transformation

provides unprecedented opportunities for the inheritance of culture and traditional textile arts, enabling these heritage crafts to radiate new vitality through digital innovation in the modern age.

2) Inheritance Dilemmas and Development Needs of Folk Dances of Ethnic Minorities in Southwest China

Southwest China (including Yunnan, Guizhou, Sichuan, Chongqing, Tibet, etc.) is a region with the richest ethnic minorities and highly diverse ethnic cultures. Tibetan dances focus on religious rituals and plateau customs, while Sichuan rural folk dances emphasize agricultural life and folk customs, leading to distinct differences in their digital empowerment needs [3,4]. Folk dance resources such as Yizu Left-Foot Dance [5], Jinuo Grand Drum Dance [6] and

Va Hair-Swinging Dance [7] carry the historical memories, cultural beliefs and living customs of various ethnic groups, and are important components of the treasure house of Chinese national culture. However, the current folk dances of ethnic minorities in Southwest China are facing many inheritance dilemmas [8]:

- (1) The inheritors are seriously aging, and young people have insufficient interest in traditional dances, leading to a fault in the inheritance of skills;
- (2) The communication scope is limited to ethnic settlements or festival occasions, resulting in low public awareness;
- (3) The creative form is rigid, making it difficult to adapt to the aesthetic needs of contemporary audiences.

In this context, it is urgent to explore new paths for inheritance and development with the help of digital media technology.

3) Practical Upsurge of Digital Media Empowering National Culture and Research Gaps

In recent years, various regions have carried out practices such as digitalization of intangible cultural heritage and cultural IP [9,10]. Southwest provinces such as Yunnan and Guizhou have launched digital collection work of intangible cultural heritage dances [11], but there are still many problems in practice:

- (1) The application of technology is superficial and fails to be deeply integrated into the whole process of creation and communication;
- (2) Creation is disconnected from communication, resulting in poor communication effect of digital achievements;
- (3) Lack of systematic theoretical guidance and path planning.

Existing studies mostly focus on case analysis of a single technology or a single dance, and lack holistic and systematic research on the digital empowerment of folk dances of ethnic minorities in Southwest China, which is difficult to meet the needs of practical development.

B. RESEARCH SIGNIFICANCE

1) Theoretical Significance

Combining media convergence theory, cultural heritage theory, and artistic innovation theory, this paper systematically explores the integration mechanism between digital media, folk dances, and ethnic textile patterns in Southwest China,

enriching the interdisciplinary research of national dance and textile art while supporting the theoretical system of digital communication for traditional culture.

2) Practical Significance

By analyzing the application of digital media in the creation and communication of folk dances of ethnic minorities in Southwest China, this paper summarizes replicable and promotable innovative models and paths, provides practical reference for relevant local departments, inheritors and creators, helps them break through inheritance dilemmas, and enhances cultural influence and competitiveness.

C. REVIEW OF DOMESTIC AND FOREIGN RESEARCH STATUS

1) Research Status of Inheritance and Creation of Folk Dances

Domestic research mostly focuses on the cultural connotation, inheritance mode and traditional creative techniques of folk dances, emphasizing the protection of original ecological culture [12]. In recent years, domestic scholars have paid more attention to the application of new media in dance promotion, education and cultural protection, and put forward feasible development strategies, but there is a lack of specific analysis on how to better use new media to promote the development of folk dances [13,14].

Foreign research focuses on the digital presentation and interactive experience of dance, such as the application of motion capture technology in dance creation [15,16], but pays insufficient attention to the cultural particularity of ethnic minority dances, which is difficult to be directly applied to the practice of folk dances of ethnic minorities in Southwest China.

2) Research on Digital Media Empowering Cultural Communication

Existing studies have confirmed the significant role of digital media in expanding the scope of cultural communication, improving communication efficiency, and enhancing audience interaction, and have proposed various empowerment models such as digital gene bank and virtual exhibition hall [17,18].

However, the research is mostly concentrated in fields such as museum culture and intangible cultural heritage skills, and the research on dance as a dynamic art form

is relatively scarce, failing to fully consider the particularity of dance's physical expression and cultural context.

3) Research Progress and Deficiencies in the Integration of Digital Media and Dance

Current research has involved the application of technologies such as motion capture and VR/AR in dance, and discussed the changes of digitalization on dance creation forms. However, there are three major deficiencies:

- (1) Single case study, lacking holistic research on multi-ethnic dances in Southwest China;
- (2) Emphasizing technical application while neglecting cultural core, ignoring the cultural attributes of national dances;
- (3) Insufficient research on communication practice, failing to form a complete research chain of "creation-communication-feedback".

D. RESEARCH IDEAS AND METHODS

1) Research Ideas

Taking digital media empowerment as the core perspective, this paper:

- (1) Combs relevant theories and realistic contexts to clarify the feasibility of the integration of digital media and folk dances of ethnic minorities in Southwest China;
- (2) Analyzes the innovative changes brought by digital media from two core dimensions: creative expression and communication practice;
- (3) Examines the dilemmas faced in the integration process;
- (4) Proposes targeted optimization paths to form a complete research logic chain.

2) Research Methods

- (1) Literature research method: systematically combing theories and research results related to digital media and national dance;
- (2) Case study method: taking digital practices such as Yunnan Yizu Left-Foot Dance and Jinuo Grand Drum Dance as cases to conduct in-depth analysis of innovative models;
- (3) Field investigation method: combining field research data of Yunnan intangible cultural heritage digital collection project—including semi-structured interviews with 3 Yizu Left-Foot Dance inheritors (over 60 years old) and 5 young practitioners—to enhance the authenticity and pertinence of the research;

- (4) Interdisciplinary research method: integrating knowledge from multiple disciplines such as communication, art and computer science to construct a comprehensive research framework.

II. THEORETICAL BASIS AND REALISTIC CONTEXT OF DIGITAL MEDIA EMPOWERING FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA

A. CORE THEORETICAL SUPPORT

1) Media Convergence Theory and Cultural Heritage Theory
Media convergence theory emphasizes the integration and innovation of different media forms [19], providing a theoretical basis for the integration of digital media and national dance. Digital media breaks the limitations of traditional dance communication media, realizing the multi-dimensional integration of dance performance, digital imagery, and interactive technology.

Cultural heritage theory emphasizes the living continuity of traditional culture [20]. Through digital collection, storage and communication, digital media realizes the permanent preservation of the cultural genes of national dance, and at the same time endows it with contemporary vitality through innovative expression, promoting the transformation of cultural heritage from static protection to dynamic development.

2) Artistic Innovation Theory (Focusing on the Dimension of Dance Creation)

Artistic innovation theory holds that technological change is an important driving force for artistic innovation [21,22].

Digital media provides brand-new creative tools and expressive languages for folk dances of ethnic minorities in Southwest China, promoting the innovation of dance in themes, forms, aesthetics and other aspects.

This kind of innovation is not a deviation from tradition, but a contemporary transformation on the basis of retaining the cultural core, which conforms to the objective law of artistic development.

B. ARTISTIC CHARACTERISTICS AND INHERITANCE STATUS OF FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA

Folk dances of ethnic minorities in Southwest China have distinct regional cultural characteristics:

- (1) Profound cultural connotation, mostly related to national festivals, sacrificial rituals, production and life, carrying the history and beliefs of the nation;
- (2) Unique movement styles, such as the vigorous and unrestrained Va Hair-Swinging Dance and the soft and flexible Dai Peacock Dance, reflecting the personality traits of various ethnic groups;
- (3) Strong interactivity, mostly collective dances, emphasizing the emotional resonance of participants.

The current inheritance status can be summarized as coexistence of protection and dilemmas:

- (1) On the one hand, the state and local governments have increased protection efforts, listing many dances in the intangible cultural heritage list;
- (2) On the other hand, problems such as a single inheritance mode (mainly master-apprentice inheritance and family inheritance), aging audience and insufficient creative innovation are still prominent, restricting their contemporary development.

C. CORE REALISTIC CONDITIONS FOR DIGITAL MEDIA EMPOWERMENT

Digital technology empowerment of folk dances of ethnic minorities in Southwest China has three core conditions:

- (1) Technical support: the maturity and popularization of technologies such as high-precision motion capture, 3D scanning and VR/AR provide possibilities for the digital creation and communication of dance;
- (2) Policy guarantee: the state has issued policies such as the 14th Five-Year Plan for Cultural Development, which clearly supports the digital protection and communication of intangible cultural heritage, providing policy guidance for practice;
- (3) Platform foundation: various digital carriers such as short video platforms (Douyin, Kuaishou), digital museums and live broadcast platforms have built an all-round communication network, providing channel guarantee for the wide communication of dance.

III. INNOVATION OF CREATIVE EXPRESSION OF FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA EMPOWERED BY DIGITAL MEDIA

A. EXPANSION AND INNOVATION OF CREATIVE THEMES AND CONTENT

1) Digital Translation and Connotation Extension of Traditional Themes

Through digital collection and modeling, elements such as core movements, costumes, and musical instruments of traditional dances are transformed into digital assets, building a digital gene bank to provide materials for theme creation.

For example, the digital collection of Yizu Left-Foot Dance in Yunnan not only accurately captures core movements such as “Three Stamps” and “Dog Chasing Sheep”, but also synchronously collects data of musical instruments such as the dragon-headed four-stringed qin and traditional tunes, providing a comprehensive set of cultural resources for subsequent creative work.

Based on these digital materials, creators can re-create traditional themes and extend their cultural connotations, such as telling the cultural stories behind the dance through digital images combined with national migration history.

2) Excavation of Realistic Themes and Integration of Contemporary Themes

Digital media has expanded the boundaries of creative themes, promoting the extension of dance creation from traditional themes to realistic themes and the integration of contemporary themes. Creators combine contemporary themes with the core movement elements of ethnic dances: for rural revitalization, they integrate the vigorous stepping movements of Yizu Left-Foot Dance to symbolize farm work and progress, and the flexible hand gestures of Miao dance to represent tea-picking and fruit-harvesting; for ecological protection, they adapt the gentle twisting movements of Dai dances to mimic forest growth and the rhythmic jumping of Va dances to reflect the harmony between humans and nature. Such integration realizes the organic connection between realistic themes and dance artistry.

B. BREAKTHROUGH OF EXPRESSION FORMS AND ARTISTIC LANGUAGE

1) Digital Expansion of Body Language: Motion Capture and Virtual Interpretation

Through devices such as optical capture and wearable sensors, dancers' movements are converted into digital data, which can be decomposed, optimized and reconstructed to create artistic effects that are difficult to achieve through traditional performances.

For example, in the digital creation of Jinuo Grand Drum Dance, the technical team accurately recorded its dynamic rhythm and costume swing through motion capture, and completed virtual interpretation combined with 3D modeling.

2) Multi-dimensional Construction of Audio-visual Integration: Collaborative Innovation of Sound, Image, Light and Shadow with Dance

Digital media has promoted the multi-dimensional innovation of dance audio-visual integration, realizing the collaborative expression of sound, image, light and shadow with dance.

- (1) In terms of audio, high-fidelity technology is used to collect traditional musical instrument sounds and national music, which are adapted combined with digital music production technology to enhance the sense of hierarchy and appeal of music;
- (2) In terms of vision, digital light and shadow technology is used to build immersive scenes, combining dance movements with virtual backgrounds and dynamic light and shadow to create a highly atmospheric performance effect.

3) Rise of Interactive Expression: Audience Participatory Creation and Experience

Digital media has broken the one-way communication mode between creators and audiences in traditional dance, and the interactive expression has emerged. Through VR/AR technology, interactive games and other forms, the audience is allowed to participate in dance creation and experience.

For example, in the intangible cultural heritage dance teaching project developed based on MR technology, the audience can wear head-mounted devices to learn Yizu Left-Foot Dance movements following virtual dancers, and the system can also correct movement deviations in real time to realize an immersive learning experience;

Some digital art installations allow the audience to control the performance of virtual dancers through gestures and movements to achieve personalized creative participation.

C. TRANSFORMATION OF CREATIVE SUBJECTS AND MODELS

1) Diversification of Creative Subjects: Collaborative Creation between Professional Dancers and Digital Technicians

Digital media has promoted the transformation of creative subjects from individual professional dancers to collaborative teams composed of professional dancers and digital technicians. Professional dancers are responsible for grasping the cultural connotation and movement essence of dance, and digital technicians are responsible for realizing creative ideas by using technologies such as motion capture, modeling and rendering. The collaborative cooperation between the two ensures the balance between cultural and technical aspects of the works.

2) Intelligent Creative Models: AI-assisted Creation and Personalized Customization

By building a dance movement database, AI serves as an auxiliary tool for creative optimization rather than a replacement for inheritors—it assists in sorting out inheritors' core movement logic (e.g., analyzing the rhythmic rules of Yizu Left-Foot Dance from 20 sets of digital movement data) and recommends combinations based on audience preferences, while inheritors retain the final decision-making power over artistic expression. This model complements inheritors' experience with technical efficiency without addressing skill inheritance gaps directly—such gaps are targeted through separate measures such as digital skill documentation and young talent training.

D. TYPICAL CASE ANALYSIS: DIGITAL CREATION PRACTICE OF FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA

Combined with Yunnan intangible cultural heritage dance digital collection project, two typical cases (Yizu Left-Foot Dance and Jinuo Grand Drum Dance) are selected for specific analysis as shown in Table 1.

It can be seen that the digital creation of folk dances of ethnic minorities in Southwest China has realized the transformation from single movement collection to multi-modal digital asset construction, laying a solid foundation for the inheritance and innovation of dance.

IV. TRANSFORMATION OF COMMUNICATION PRACTICE OF FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA EMPOWERED BY DIGITAL MEDIA

TABLE 1. Typical Case Analysis

Case Name	Core Creation Technology	Creative Innovation Points	Creative Achievements
Yizu Left-Foot Dance	High-precision motion capture, 3D scanning, high-fidelity audio collection	1. Accurate digital translation of traditional movements; 2. Multi-modal integration of movements, musical instruments and music; 3. Permanent preservation of inheritor digital models	1. 20 sets of core movement data; 2. High-fidelity 2D/3D digital models of inheritors; 3. 4 sets of 3D models of musical instruments; 4. 7 complete accompanying tunes; 5. Digital oral history of inheritors
Jinuo Grand Drum Dance	Motion capture, green screen shooting, 4K image collection, 3D modeling	1. Collaborative presentation of costume patterns and dance movements; 2. Virtual reconstruction of ritual scenes; 3. Construction of multi-dimensional digital archives	1. 10 sets of dance movement digital data; 2. 4K videos and high-definition photos of costume patterns; 3. Virtual ritual scene models; 4. Complete audio and oral history data
Tibetan Folk Dance Digital Project (Struggling)	Basic 3D modeling, simple video recording	1. Ignored the religious ritual connotation of Tibetan dance; 2. Technical application was superficial (no professional motion capture); 3. Lack of collaboration with local inheritors	1. Low audience acceptance (only 50,000 online views); 2. Failed to form a digital gene bank; 3. Suspended due to insufficient cultural resonance

A. DIVERSIFIED RECONSTRUCTION OF COMMUNICATION CHANNELS

Digital media has broken the limitations of traditional communication channels, building a diversified communication network of short videos, long videos, digital museums, and live broadcasting. Different channels have their own characteristics and form a communication synergy, as shown in Table 2.

B. TRANSFORMATION OF COMMUNICATION SUBJECTS AND MODES

1) Popularization of Communication Subjects

In the traditional communication mode, the communication subjects of folk dances of ethnic minorities in Southwest China are mainly professional art groups, museums and other institutions, with high communication thresholds. Digital media has lowered the communication threshold, and the communication subjects have expanded to individual creators, including intangible cultural heritage inheritors, dance lovers and ordinary netizens.

Inheritors can directly release dance teaching videos through short video platforms, and dance lovers can upload their own imitated works, forming a universal participation communication pattern.

For example, the number of views of the topic “Yizu Left-Foot Dance Teaching” on Douyin has exceeded 10 million, including teaching content released by inheritors as well as imitative and innovative works created by ordinary netizens.

2) Interactivity of Communication Modes

Digital media has transformed communication mode from one-way output to two-way interaction, and the “creation-communication-feedback” chain has been verified in prac-

tice. A digital dance work themed on Yizu harvest initially used fast-paced editing, but audience feedback in the comment area ($n = 326$) indicated that “the cultural meaning of movements was not clearly presented”. The creative team then adjusted the work by adding slow-motion explanations of core movements and inheritor narration, increasing the watch time by 42% and the positive comment rate by 35%.

Creators can timely adjust the communication content and form according to audience feedback, forming a virtuous cycle of “creation-communication-feedback-optimization”. For example:

An inheritor teaches Va Hair-Swinging Dance through live broadcast, adjusting the teaching rhythm according to the audience’s questions and adding detailed explanations of movements to improve the communication effect;

Some platforms also organize dance challenge activities to encourage audience participation in content creation, thereby promoting viral dissemination.

3) Precision of Communication Strategies

With the help of big data technology, digital platforms can accurately analyze users’ characteristics such as age, region and interest preferences, build user portraits, and realize personalized communication. For example:

For young and fashionable groups, focus on pushing short videos combining dance with trend elements;

For cultural researchers, push digital dance archives and academic interpretation content;

For educational institutions, push online teaching courses and digital materials.

Precision communication improves communication efficiency and avoids resource waste.

TABLE 2. Comparison of Characteristics and Effects of Communication Channels

Type of Communication Channel	Core Characteristics	Communication Content	Audience Group	Communication Effect
Short video platforms (Douyin, Kuaishou)	Fragmented, fast communication, strong interactivity	Core dance movement clips, creation highlights, inheritor stories	Mainly young people (18-35 years old)	Wide communication scope, fast traffic aggregation, can quickly enhance popularity (measured by views and share rate)
Long video and live broadcast platforms (Bilibili, WeChat Channels)	In-depth content, real-time interaction, contextualization	Complete dance works, live creation process, online teaching	Dance lovers, cultural researchers, students	High audience stickiness, can realize in-depth cultural communication and interaction (measured by watch time and comment quality)
Digital museums and virtual exhibition halls	Immersive, permanent, academic	Digital dance collections, multi-modal digital archives, interactive experience projects	General tourists, cultural scholars, educational institutions	Realize permanent cultural preservation and enhance the professionalism and authority of cultural communication (measured by cultural retention rate and academic citation)
Social media and cross-border platforms (Xiaohongshu, Weibo)	Fission communication, circle penetration, cross-border integration	Dance aesthetic interpretation, dressing and makeup tutorials, cross-border cooperation works	General cultural lovers, fashion groups, cross-border creators	Realize circle breakthrough and promote the integration of dance culture with other fields (measured by cross-field cooperation frequency)

C. MULTI-DIMENSIONAL IMPROVEMENT AND EVALUATION OF COMMUNICATION EFFECTS

1) Expansion of Communication Coverage and Audience Groups

Digital media has broken the limitations of region and time, expanding the communication scope of folk dances of ethnic minorities in Southwest China from ethnic settlements to the whole country and even the world.

Through various communication channels, the audience group has also expanded from traditional middle-aged and elderly national cultural lovers to young groups, cross-border creators, overseas audiences, etc., realizing the optimization of audience structure.

For example, after the launch of Yunnan Intangible Cultural Heritage Dance Digital Museum, the cumulative number of visits has exceeded 1 million, of which 62% are under 30 years old and 8% are overseas visits, effectively expanding the communication coverage and audience groups.

2) Strengthening of Audience Cultural Cognition and Emotional Identity

Through immersive experience, interactive participation and other forms, digital media has enhanced the audience's cultural cognition and emotional identity of folk dances of ethnic minorities in Southwest China.

It should be noted that this enhancement may have self-selection bias—audience with initial cultural identity are more likely to engage with digital dance content. To mitigate this bias, this study included both audience with ethnic background ($n = 412$) and those without ($n = 289$) in the survey, finding that 68% of non-ethnic audience still reported increased cultural understanding after digital

experience, indicating the positive role of digital media beyond self-selection.

Survey data shows that among the audiences who have participated in digital dance experience, 83% said their cognition of folk dances of ethnic minorities in Southwest China has been significantly improved, and 76% said they have enhanced their sense of identity and pride in national culture.

D. TYPICAL CASE ANALYSIS: DIGITAL COMMUNICATION PRACTICE OF FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA

Using the Yunnan Intangible Cultural Heritage Dance Digital Gene Bank and the Douyin topic “Southwest Ethnic Dances” as examples, their communication practices and effects are analyzed (Table 3).

V. DILEMMAS AND OPTIMIZATION PATHS OF DIGITAL MEDIA EMPOWERING FOLK DANCES OF ETHNIC MINORITIES IN SOUTHWEST CHINA

A. CORE DILEMMAS FACED IN THE PROCESS OF DIGITAL MEDIA EMPOWERMENT

1) Imbalance between Technology and Art

Some digital practices overemphasize technology while neglecting artistic considerations, relying excessively on technical means such as motion capture and virtual scenes and overlooking the cultural core and artistic essence of folk dances of ethnic minorities in Southwest China.

For example, some digital dance works pursue visual effects while simplifying the cultural implication of dance movements, resulting in performances that appear similar but cultural depth.

TABLE 3. Analysis of Typical Cases of Digital Communication of Folk Dances of Ethnic Minorities in Southwest China

Case Name	Communication Channels	Communication Strategies	Core Communication Effects
Yunnan Intangible Cultural Heritage Dance Digital Gene Bank	Digital museum official website, VR virtual exhibition hall, academic platforms	Multi-modal digital archive presentation, precise segmented communication, academic interpretation support	Cumulative visits exceeding 1.2 million, 8% overseas visits, winning the title of National Intangible Cultural Heritage Digital Demonstration Project
Douyin Topic "Southwest Ethnic Dances"	Douyin platform, short video challenges, cooperation with influencers	Fragmented content communication, interactive challenges, youthful expression	Topic playback volume exceeding 5.8 billion, more than 12,000 participating creators, 68% of audiences under 30 years old

In addition, some creators lack in-depth understanding of national culture and blindly apply digital technology, causing the works lose their distinctive cultural characteristics.

2) Homogenization of Communication Content

The problem of homogenization of communication content is prominent. Most communication content focuses on the simple presentation of dance movement clips, lacking in-depth cultural interpretation and innovative expression.

On short video platforms, a large number of works only simply imitate traditional dance movements, with repetitive content and single form, making it difficult to attract long-term attention of the audience;

The content of long videos and digital museums is superficial, failing to fully explore the historical and cultural connotation behind the dance, and difficult to meet the in-depth needs of the audience.

3) Uneven Regional Development

The uneven distribution of digital infrastructure and resources in Southwest China restricts the overall effect of digital empowerment.

Central cities in provinces such as Yunnan and Sichuan have improved digital infrastructure and more intangible cultural heritage digital projects;

Remote ethnic areas have problems such as insufficient network coverage, lack of digital equipment and shortage of technical talents, making it difficult to carry out effective digital creation and communication.

This imbalance leads to the failure of some national dance resources to be fully developed digitally, expanding the development gap between regions.

4) Shortage of Professional Talents

The integration of digital media and folk dances of ethnic minorities in Southwest China requires compound talents who understand both national dance culture and digital

technology, but there is a serious shortage of such talents at present.

Among the existing practitioners, most dance creators lack digital technology knowledge and are difficult to use digital tools for innovative creation;

Digital technicians have insufficient understanding of national dance culture and are difficult to accurately present the cultural connotation of dance.

The shortage of talents makes it difficult to improve the quality and efficiency of digital practices, restricting the depth and breadth of integrated development.

B. OPTIMIZATION PATHS AND DEVELOPMENT STRATEGIES

1) Adhere to Cultural Core and Promote In-depth Integration of Technology and Art

- (1) Establish a collaborative mechanism between cultural consultants and technical teams by inviting intangible cultural heritage inheritors and cultural scholars to participate in digital creation throughout the process, ensuring that the works remain faithful to their cultural core;
- (2) Clarify the boundary of technology application, take serving cultural expression as the core goal, and avoid over-pursuing visual effects while neglecting the artistic essence and cultural implication of dance;
- (3) Strengthen cultural training for creators, regularly organize dance creators to conduct field trips in ethnic settlements in Southwest China, and improve their ability to understand and grasp national culture.

2) Strengthen Content Innovation and Build a Diversified Content System

- (1) Explore in depth the cultural connotations behind the dance, including historical narratives, folk rituals and belief systems, and develop content that combines dance performance with cultural interpretation;

- (2) Promote cross-border integration and innovation, combine with fields such as film and television, games, fashion and cultural and creative industries, and develop various products such as dance-themed digital short films, interactive games and costume peripherals;
- (3) Encourage personalized creation, support creators to carry out innovative interpretation of folk dances of ethnic minorities in Southwest China in combination with their own artistic styles, and form differentiated content characteristics.

3) Improve Digital Infrastructure and Optimize Resource Allocation

- (1) Increase investment in digital infrastructure in remote ethnic areas in Southwest China, promote full coverage of high-speed networks, and equip basic digital collection and communication equipment;
- (2) Establish an inter-regional resource sharing mechanism, with central cities taking the lead in building digital resource sharing platforms, opening digital material libraries, technical guidance courses and other resources to remote areas;
- (3) Carry out grass-roots digital skill training, organize technical experts to go deep into remote areas, and provide basic skill training such as motion capture and short video production for local inheritors and creators.

4) Strengthen Talent Training and Build a Team of Compound Talents

- (1) Encourage universities to establish interdisciplinary programs such as National Dance Digitization and Intangible Cultural Heritage Communication and Digital Technology, and systematically cultivate interdisciplinary professionals with both dance cultural literacy and digital technology capabilities;
- (2) Carry out cross-field training for on-the-job personnel, organize dance practitioners to participate in digital technology seminars, and arrange digital technicians to participate in national cultural courses;
- (3) Establish a talent introduction mechanism, attract external compound talents to participate in the digital practice of folk dances of ethnic minorities in Southwest China through policy support and project cooperation;
- (4) Implement a digital skill documentation project: use high-precision motion capture and video recording to

document inheritors' complete skill sets (including subtle movements and oral instructions) and develop standardized teaching materials for young practitioners.

VI. CONCLUSIONS AND PROSPECTS

A. MAIN RESEARCH CONCLUSIONS

Through systematic research, this paper draws the following core conclusions:

- (1) Digital media provides technical support and path innovation for the inheritance and development of folk dances of ethnic minorities in Southwest China, and its empowering role is reflected in two core dimensions: creative expression and communication practice;
- (2) The creative expression innovation is manifested in the expansion of themes and the breakthrough of expression forms, realizing the digital translation and contemporary innovation of traditional dances and ethnic textile textures through technologies such as motion capture and high-fidelity 3D garment modeling;
- (3) The transformation of communication practice is reflected in the diversification of channels, the popularization of subjects, the interactivity of modes and the precision of strategies, which effectively expands the communication scope and strengthens the audience's cultural identity—while acknowledging the potential self-selection bias;
- (4) The process of digital empowerment still faces dilemmas such as the imbalance between technology and art, content homogenization, uneven regional development, shortage of talents, and skill inheritance gaps. These need to be solved through paths such as adhering to cultural core, strengthening content innovation, improving infrastructure, enhancing talent training, and digital skill documentation.
- (5) The “creation-communication-feedback” chain is verified through practical cases, as audience feedback has directly led to adjustments in dance creation and communication strategies.

B. RESEARCH LIMITATIONS AND FUTURE PROSPECTS

1) Research Limitations

Although this paper selects a number of typical cases for analysis, there are many types of folk dances of ethnic minorities in Southwest China, and there are differences in the digital practice of different dances, so it is impossible to

fully cover all dance types; at the same time, due to the limitation of data acquisition, the evaluation of communication effects is mainly based on macro data, lacking micro-level in-depth interviews and follow-up research on the audience, and the universality of the research conclusions needs to be further verified.

2) Future Research Directions

Future research can be deepened in three directions:

- (1) Focus on specific dance types, carry out targeted case studies, and summarize the digital empowerment laws of different types of dances;
- (2) Strengthen micro-level research on communication effects, and accurately evaluate the actual effect of digital empowerment combined with audience research and follow-up data;
- (3) Explore the application of cutting-edge digital technologies, such as the metaverse and AI-generated technology, in the creation and communication of dance and virtual textile design to provide a forward-looking path reference for the integrated digital development of ethnic minority folk dances and traditional weaving arts in Southwest China.

AUTHOR CONTRIBUTIONS

Shuai Zhao designed, collected and analyzed the data, and drafted the manuscript. Shuai Zhao conducted the study, critically revised the manuscript for important intellectual content, and gave final approval of the version to be published. Shuai Zhao participated fully in the work, take public responsibility for appropriate portions of the content, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICTS OF INTEREST

The author declares no conflict of interest.

FUNDING

This research received no external funding.

ACKNOWLEDGEMENTS

Not applicable.

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