

# Research on the English Translation and International Communication Paths of Chinese Northern Borderland Culture under the Background of AI Empowerment

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**How to cite this paper:** Bai, X. Y., & Bai, T. (2026). Research on the English Translation and International Communication Paths of Chinese Northern Borderland Culture under the Background of AI Empowerment. *Open Journal of Social Sciences*, 14, 296-310.

<https://doi.org/10.4236/jss.2026.145018>

**Received:** May 1, 2026

**Accepted:** May 22, 2026

**Published:** May 25, 2026

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## Abstract

Against the backdrop of globalization and AI application, the English translation and international communication of Chinese Northern Borderland Culture are of great significance for displaying the diversity of Chinese civilization and enhancing regional cultural influence. Taking AI empowerment as the perspective, this paper reviews the connotation, translation and communication status of Chinese Northern Borderland Culture, expounds the advantages, limitations and application principles of AI translation, and points out the existing bottlenecks such as non-standard terminology, inadequate cultural transmission, inefficient communication and shallow technical application. On this basis, it constructs an optimized path for AI-empowered translation and communication from six dimensions, aiming to improve the quality and effectiveness of international communication. This study provides a reference for the high-quality global dissemination of Chinese Northern Borderland Culture.

## Keywords

AI Empowerment, Chinese Northern Borderland Culture, English Translation, International Communication

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## 1. Introduction

In an era of deep integration between globalization and digital civilization, the international communication of culture has become an important way to enhance national cultural soft power. Promoting Chinese culture globally requires not only the wide dissemination of mainstream culture, but also the participation of re-

gional cultures with distinctive local features and profound ethnic connotations, so as to enrich the overall narrative of Chinese culture. Chinese Northern Borderland Culture formed in the Inner Mongolia carries significant value for international communication and serves the external dissemination of China's national image (Zhang, Wang, & Wang, 2025). As elaborated below, this translation preserves regional characteristics while capturing the breadth and depth of the culture, according with its status as an integral part of Chinese civilization. Rooted in the northern border areas of China, Chinese Northern Borderland Culture is a comprehensive cultural form developed through long-term historical evolution. It integrates the culture of the grassland, the Yellow River, the Great Wall, farming, nomadism, revolution and ecology, which serves as a vivid epitome of the multi-integrated structure of Chinese civilization, reflecting the historical process of communication, exchange and integration among various ethnic groups. In the continuous inheritance of Chinese civilization, Chinese Northern Borderland Culture plays an irreplaceable role in constructing the unity of Chinese civilization (Liu, 2024). Zhu (2025) pointed out that culture serves as a key pillar for high-quality development, and the building of regional cultural brands can boost its advancement. The international communication of Chinese Northern Borderland Culture is necessary not only for facilitating regional high-quality development and demonstrating the richness and inclusiveness of Chinese culture, but also for promoting inter-civilization exchanges and enhancing global recognition.

With the rapid development of artificial intelligence, tools such as large language models, neural machine translation, corpus technology, multimodal content generation and big data analytics have become increasingly sophisticated, profoundly reshaping the modes of cultural translation and international communication. AI demonstrates remarkable advantages in improving translation efficiency, standardizing terminology, reducing communication costs and expanding coverage, providing new technological support and innovative possibilities for regional cultures to go global. Nevertheless, the current international communication of Chinese Northern Borderland Culture still faces many practical problems: the English translation of cultural texts lacks systematicness; terminology is inconsistent; culturally loaded words are inaccurately conveyed; historical context and ethnic connotations are easily lost; communication channels are relatively traditional; digital platforms are underused; content presentation is overly academic and rigid, and fails to resonate with overseas audiences; translation and communication are disconnected without a coordinated and efficient mechanism; the integration of AI and Chinese Northern Borderland Culture remains superficial, and targeted translation strategies and communication paths have not yet been systematically established.

Against this background, based on AI empowerment, which is regarded as a technology-enabled model that relies on artificial intelligence to improve translation efficiency, standardize terminological expressions, optimize content production and communication channels, it is of great theoretical and practical signifi-

cance to systematically explore the English translation and international communication of Chinese Northern Borderland Culture, and to construct scientific and feasible international communication paths (a comprehensive system of translation strategies, channels, content forms, and mechanisms for global cultural outreach) adapted to overseas audiences. This paper is a conceptual study that selects relevant literature, policy texts and typical cases based on thematic relevance, representativeness, academic and practical value. Theoretically, this study helps expand the research horizons of regional cultural translation, digital humanities and cross-cultural communication, and enrich the interdisciplinary achievements of AI and cultural communication. Practically, it helps improve the accuracy and standardization of English translations of Chinese Northern Borderland Culture, enhance its global reach, affinity and influence and provide references for cultural outreach in Inner Mongolia and other border regions. Taking AI application as the starting point, this paper combines the basic rules of cultural translation and international communication, analyzes the current situation and problems, explains the advantages and limitations of AI translation, and constructs integrated communication paths, aiming to provide a reference for the high-quality global dissemination of Chinese Northern Borderland Culture.

## 2. Literature Review

### 2.1. Chinese Northern Borderland Culture

“Northern Borderland” refers to the vast northern border areas of China with Inner Mongolia Autonomous Region as the core. From a cultural perspective, it is a broad regional concept (Kang & Zhai, 2023). Historically, in terms of production and lifestyle, Chinese Northern Borderland Culture covers grassland culture, farming culture, fishing and hunting culture, ecological culture, industrial culture, the Mongolian Horse Spirit and the “Three Norths Spirit”; in terms of regional features, it includes desert culture, Great Wall culture, Hetao culture, Western Liao River culture, frontier fortress culture and oasis culture (Zhu, 2023). Academically, Chinese Northern Borderland Culture is an important part of Chinese culture, whose spiritual symbols embody fine traditional Chinese culture, and it is a regional culture with distinct border characteristics covering various cultural forms in Inner Mongolia (Zhu, 2024).

Officially proposed as a regional cultural brand by Inner Mongolia Autonomous Region in 2023, Chinese Northern Borderland Culture takes fostering a strong sense of community for the Chinese nation as the main line, integrates the historical traditions of northern ethnic groups, revolutionary genes and contemporary spirits, takes the leadership of the Communist Party of China, socialism with Chinese characteristics and patriotism as its logical core and takes people-centeredness, ethnic self-improvement and ecological priority as core categories. It is a cultural achievement of in-depth integration of farming and nomadic civilizations and extensive exchanges among ethnic groups (Wu, Wang, & Suo, 2025). Jointly created by ethnic groups in northern border areas, Chinese Northern Bor-

derland Culture is both historical and realistic, embodying a strong identification with the concept of “great unity” and the Chinese national community, and continuously promoting the institutional innovation and development of China’s unified multi-ethnic country (Li & Liu, 2023). With revolutionary culture as its foundation, mutual support as its core idea, and the Mongolian Horse Spirit and “Three Norths Spirit” as its cultural identity, it features inclusiveness from multi-ethnic integration, diversity in cultural inheritance, openness in exchanges and mutual learning, innovativeness in contemporary call and practicality in upholding national identity (Jian, 2023). As emphasized by Zhu (2024), Chinese Northern Borderland Culture and its brand building provide a model for ethnic exchanges, integration and interaction, and are significant for interpreting the prominent features of Chinese civilization and advancing the building of a modern Chinese civilization.

## 2.2. The Present of English Translation and Communication of Chinese Northern Borderland Culture

With the in-depth implementation of the national cultural digitalization strategy and the Going Global initiative for Chinese culture, as well as the Chinese Northern Borderland Culture Development Campaign in Inner Mongolia, English translation and international communication activities related to Chinese Northern Borderland Culture have become increasingly regular and systematic. Translated classics, literary works, intangible cultural heritage introductions, folk custom displays, cultural tourism promotion, academic papers, themed exhibitions and digital museums have gradually gained global visibility. Communication channels embody academic exchanges, cultural delegations, official multilingual websites, new media accounts, foreign-language publications, international exhibitions and overseas tourism promotion centers. Its communication forms have expanded from single texts to pictures, short videos, virtual exhibitions and immersive experiences. Overall, the international communication of Chinese Northern Borderland Culture has shifted from sporadic exploration to systematic promotion, with gradually increased global attention.

In the English translation of academic classics and ethnic history, high-level achievements supported by the National Social Science Fund’s Chinese Academic Translation Project have emerged. The research team from Inner Mongolia University completed and published the English translation of *A General History of the Xiongnu*, distributed globally by American Academic Press, becoming a representative and comprehensive English version for the study of ancient northern ethnic history in China, providing standardized textual support for the international academic community to accurately understand Xiongnu history and the origins of northern ethnic groups. Meanwhile, the team of Associate Professor Lin from the School of Foreign Languages of Inner Mongolia University is leading the ongoing English translation project of *A History of the Donghu*, another National Social Science Fund-funded academic translation program. Based on the transla-

tion practice of *A General History of the Xiongnu* and *A History of the Donghu*, researchers have focused on the English translation of core terms of Chinese Northern Borderland Culture in ancient northern ethnic history and constructed a term memory base by combining digital technology and humanities methods to explore strategies for terminological consistency and contextual representation (Lin & Yang, 2026). This research helps address problems of terminological consistency and cultural contextual expression, providing methodological guidance for cross-cultural communication and academic translation projects of Chinese Northern Borderland Culture.

In the English translation of literary and artistic works, a number of works reflecting northern border life, grassland culture and ethnic emotions have been published in English and disseminated globally. The English translation of Li Juan's nonfiction prose *Winter Pasture: One Woman's Journey with China's Kazakh Herders* was officially published by Astra Publishing House in New York in 2021. With delicate and authentic depictions of nomadic life, it has received certain positive feedback and recognition in the English-speaking world and regarded by Western critics as an important text for understanding northern border nomadic culture, ecological values and ethnic lifestyles. Its translation strategies in handling culturally loaded words, restoring folk scenes and representing regional features have provided a useful reference for northern border literature translation. Zhang and Liu (2023) described the translator's reconstruction of the original text at the levels of vocabulary, syntax, paragraphs, discursive narrative forms and found that these strategies effectively reproduced the "silence" and "desolation" of the ecological and humanistic landscape in *Winter Pasture*. In addition, there are other multilingual practices mainly serve as supporting background. For instance, at the 31st Beijing International Book Fair, Inner Mongolia Culture Press promoted the copyright export of the grassland lyrics collection *Suen-Sachuli* to Mongolia and released the Cyrillic version of *Quiet Aimin River*, which tells national unity stories such as "Three Thousand Orphans Entering Inner Mongolia" to spread Chinese Northern Borderland Culture in neighboring countries. Although formal English translations for the English-speaking world remain limited, such multilingual practices have laid a foundation for the translation and international communication of literary works of Chinese Northern Borderland Culture.

In cultural tourism promotion and signage translation, standardized English versions have gradually taken shape for scenic spot introductions, cultural symbols, folk activities and heritage interpretations across Inner Mongolia. English tourism promotional videos, tour guides and multilingual panels in places such as the Inner Mongolia Museum, Hulunbuir and Ulanqab adopt internationally accepted translations for core cultural symbols including Nadam Fair, Ovoo, Mongolian yurt, Morin huur and Khoomei, with unified cultural notes to reduce cross-cultural comprehension barriers. In cultural tourism texts in Ordos, Chifeng and Xilingol, standardized English translations such as Hongshan Culture, Yellow

River Culture, Western Liao River Culture and Great Wall Culture are used consistently in overseas promotion, forming relatively stable global recognition. From 2024 to 2025, the “Beautiful Inner Mongolia” cultural and tourism overseas stable cross-border multilingual communication channels exhibitions were held in Germany, France, South Korea, Japan and other countries, using unified English texts to promote grassland culture, the Tea Road, Mongolian folk customs and cultural creative products through photo exhibitions, short videos and intangible cultural heritage object displays. In addition, the Jining District of Ulanqab released an English tourism promotional video *Livable Jining* in August 2024 to enhance regional cultural identity with international expressions.

In the English translation of intangible cultural heritage and folk culture, English introductions, performance commentaries and inheritors’ oral histories of national-level items have become increasingly standardized. Mongolian Long Song, Morin huur, Nadam Fair, Mongolian Costumes and Ovoo Sacrifice use fixed English names in international exchanges with clear cultural interpretation, facilitating quick recognition by global audiences. In May 2024, Manhan Tune of Jungar Banner, a national-level intangible cultural heritage item, was presented at the International Fair in Paris, France, alongside paper-cutting, egg carving, dough modeling and other skills and creative products, with professional English explanatory texts to convey both craftsmanship and cultural connotations.

In digital museums and multilingual platform translation, the English translation of Chinese Northern Borderland Culture has shown new trends of digitalization and systematization. The Inner Mongolia Museum has completed English explanations and multilingual panoramic exhibitions for numerous precious cultural relics, providing standardized English translations and contextual interpretations for cultural heritages such as the Hongshan Jade Dragon, Liao Dynasty relics and the site of the Yuan Dynasty, with global sharing of cultural heritage information. Launched in 2025, the Digital Museum of Northern Borderland has built 47 virtual exhibition halls using VR and digital twin technologies, covering 300 intangible cultural heritage items and 350 inheritors, with multilingual versions open to the world, which forms supplementary cross-border multilingual communication channels to support the English-oriented international communication system. For example, Hulunbuir’s “Akenuo” China-Russia bilingual platform, international youth research programs and “Horizon of Hulunbuir” International Communication Studio have continuously released over one thousand English tourism updates and cultural short videos, which forms relatively stable cross-border multilingual communication channels.

Overall, the English translation of Chinese Northern Borderland Culture has evolved from scattered, spontaneous and non-standard practices to a new stage of project-based, systematic, standardized and digital development, forming a multi-level pattern led by classic translation, supported by academic translation, popularized by tourism promotion and expanded by digital platforms. A batch of representative translations, standardized terms and stable cultural symbols have been

consistently used in international communication, laying a solid practical foundation for further improving translation efficiency, unifying terminology, optimizing international expressions and improving communication paths under AI empowerment.

### **2.3. Problems in the English Translation and International Communication of Chinese Northern Borderland Culture**

Despite the progress achieved, the English translation and international communication of Chinese Northern Borderland Culture still have obvious shortcomings in translation quality, content supply, channel efficiency, technology application and mechanism coordination. Translation and communication are disconnected and fragmented, failing to form an integrated force for high-quality global outreach. The problems are as follows.

At the translation level: First, the terminology system is inconsistent and non-standard. Core terms such as ancient tribes, historical place names, official titles and religious customs lack unified criteria, leading to divergent expressions of the same concept in different translations and confusing overseas audiences. Second, the handling of culturally loaded words is superficial, causing severe cultural discount. Direct transliteration is often used for Ovoo, Nadam Fair, Khoomei, Morin huur and historical allusions, failing to fully convey historical context, ethnic connotations and spiritual values, resulting in obvious information loss. Third, translations are Chinglish and unreadable: some texts are rigid, overly academic and logically obscure, inconsistent with English reading habits and poorly accepted by general overseas audiences. Fourth, quality control is weak: insufficient manual proofreading and cultural calibration, over-reliance on raw machine outputs, lack of professional cultural review, leading to frequent factual errors and contextual deviations.

At the communication level: First, content overemphasizes explanation and neglects narration, lacking attractiveness. Most content focuses on conceptual introduction and knowledge popularization without storytelling, emotional or situational expressions, making it hard to trigger cross-cultural empathy. Second, communication channels are traditional and single, with weak overseas presence: underdevelopment of YouTube, TikTok, Instagram and other major international platforms, few multilingual accounts, slow updates and limited reach. Third, insufficient multimodal innovation: monotonous presentation, shortage of visual, short-video, immersive and interactive content, overly static and text-based forms with weak appeal. Fourth, severe disconnection between translation and communication without a closed-loop mechanism: high-quality translations are not effectively converted into communication materials, while communication content lacks accurate translation support; production, translation and promotion are disconnected and inefficient.

In short, Chinese Northern Borderland Culture is challenged by inaccurate translation, inefficient communication, superficial technology application and

poor coordination. Translation shortcomings restrict communication effects, and communication weaknesses devalue translation outcomes, becoming the main bottleneck for high-quality global outreach.

### **3. Application of AI Translation in the English Translation of Chinese Northern Borderland Culture**

#### **3.1. Basic Principles**

AI-empowered English translation of Chinese Northern Borderland Culture must follow clear principles to ensure accurate cultural transmission, standardized terminology and high overseas acceptance. First, cultural fidelity: prioritizing the accurate transmission of cultural connotations, historical information and ethnic spirit to preserve cultural authenticity. Second, terminological unity: establishing a standardized term base to ensure consistent expressions across all texts and scenarios. Third, audience orientation: adapting to the linguistic habits, cognitive logic and reading preferences of overseas audiences to improve readability and acceptance. Fourth, collaborative complementarity: using AI for efficiency and human expertise for cultural accuracy, realizing the organic integration of technology and humanities.

#### **3.2. Advantages**

AI translation has outstanding efficiency and scalability in processing Chinese Northern Borderland Culture texts, providing efficient, convenient and standardized technical support for cultural outreach. First, it features high speed, rapidly completing large-volume translations of tourism promotion, popular science, news and exhibition texts to significantly improve efficiency. Second, it supports synchronized multilingual conversion, generating English, Russian and other versions to facilitate communication across multiple countries and regions. Third, it integrates term bases and translation memories to maintain consistency in high-frequency words, fixed expressions and proper nouns, enhancing translation standardization. Fourth, it produces uniformly formatted outputs, reducing post-editing, revision and typesetting costs, suitable for batch translation of practical and popular cultural texts.

#### **3.3. Limitations**

AI translation has clear limitations in handling Chinese Northern Borderland Culture texts and cannot independently accomplish high-quality, culturally intensive English translations. Lacking deep understanding of historical context, ethnic customs, cultural metaphors and regional sentiments, AI often produces literal translation, semantic breakdown, cultural dislocation and factual errors. For ethnic historical terms, cultural heritage names, proper nouns of intangible cultural heritage, grassland literary images and spiritual value expressions, AI fails to accurately restore connotations and contexts, leading to cultural information loss, rigid expressions and even misunderstanding. Therefore, AI cannot independently

undertake English translations of academic classics, literary works that require high professionalism and cultural sensitivity, and must be combined with manual collation, cultural calibration and academic verification.

In addition, AI translation entails specific ethical and quality risks that must be addressed within the principle framework. Training corpora of large language models may be influenced by Western cultural perspectives, leading to distorted expression of cultural connotations and challenges to cultural subjectivity (Li, 2025). Model training involves unauthorized data use and lack of informed consent, raising ethical risks concerning data ownership, copyright, and privacy (Chen, 2025). Meanwhile, AI translation may produce semantic deviations, inaccurate expressions and quality problems, which undermine the accuracy and standardization of cultural texts (Zhang, 2024). Therefore, it is essential to strengthen human calibration and ethical governance in the English translation of Chinese Northern Borderland Culture, and uphold the principles of cultural fidelity, data compliance, and clear accountability.

#### **4. Path Construction for AI-Empowered English Translation and International Communication of Chinese Northern Borderland Culture**

In response to the practical problems in the English translation and international communication of Chinese Northern Borderland Culture as elaborated above, including insufficient terminology standardization, inadequate cultural transmission, weak appeal of communication content, limited communication channels, lack of multimodal innovation, and disconnection between translation and communication, this paper constructs an AI-empowered optimization path from six dimensions. All paths are problem-oriented and accurately respond to existing bottlenecks to promote the systematic improvement of the English translation and international communication of Chinese Northern Borderland Culture.

AI technology provides strong support for improving the quality and efficiency of English translation and international communication of Chinese Northern Borderland Culture. Relying on intelligent translation, corpus, multimodal generation and big data analytics, an integrated communication pathway centered on accurate English translation and oriented toward cross-cultural acceptance can be constructed from six dimensions: concept, content, platform, form, mechanism and discourse, to promote high-quality global outreach of Chinese Northern Borderland Culture.

1) Upgrading Communication Concept: Supporting Cross-Cultural Dialogue through Precise English Translation

Abandon the one-way cultural output mindset and establish a cross-cultural dialogue concept based on accurate English translation and cultural empathy. For the communication of excellent traditional Chinese culture, Duan (2026) emphasized the shift from “self-expression” to “intersubjective dialogue” by exploring “cultural commensurability” and reconstructing the communication ethics of

“coexistence with differences”. Similarly, the international communication of Chinese Northern Borderland Culture should focus on universal values such as harmony between humans and nature, ethnic unity, resilience and openness, presenting the culture in idiomatic English to shift from “simple display” to “effective dialogue”. Cultural authenticity should be upheld in translation and communication, with AI tools enhancing the precise delivery of culturally loaded words, historical terms and ethnic connotations.

#### 2) Content Production Path: AI-Driven Standardized Translation and Lightweight Narration

Xing and Liu (2024) proposed that intelligent content production via AI to deeply explore and vividly present historical and human resources is a practical path for building Chinese Northern Borderland Culture as a regional brand. Therefore, AI is used to extract cultural terms, generate English narrative scripts, revise multiple translations and streamline content, promoting standardized, lightweight and story-driven English translations. Liu (2023) pointed out that digital technology has brought new narrative models for communication of intangible cultural heritage, transforming from single-modal to multimodal narration in texts, modes, strategies and perspectives. Consistent with this trend, AI restructures English narratives for cultural heritage, skills, ethnic life and historical allusions, converting academic and local expressions into accessible and transmissible English content. AI rapidly generates standardized and unified English versions to improve efficiency and terminological consistency, expanding global coverage and facilitating efficient international dissemination.

#### 3) Platform Communication Path: Precise Distribution of English Content via Global Platforms

Yang (2025) advocated multi-platform linkage for effective communication of Chinese Northern Borderland Culture, integrating websites, short-video platforms (Tik Tok, Kwai), social media (WeChat, Weibo) and clients to build a comprehensive system covering text, audio, video and live broadcasting. Therefore, taking English as the core communication language, a linked multilingual digital communication matrix at home and abroad is essential. Domestically, multilingual official websites, digital museums and foreign-language new media accounts are improved to consolidate the release of standardized English translations. Globally, major platforms such as YouTube, Instagram and TikTok are prioritized to continuously output AI-optimized English short videos, graphic information and cultural interpretations. Cooperation with overseas universities, research institutions and cultural centers is strengthened to publish authoritative English translations, enhancing the credibility and reach of English content about Chinese Northern Borderland Culture.

#### 4) Form Innovation Path: Multimodal Technology Empowering Visual Presentation of English Translations

Wang and Ma (2026) pointed out that technological innovation, especially VR and AR, strongly supports the international expression of Chinese Northern Bor-

derland Culture by restoring scenes and stimulating emotional resonance. In practice, AI image generation, intelligent editing, automatic English subtitles, multilingual dubbing, VR, AR virtual exhibitions and other technologies convert static English texts into visual, immersive and interactive content. Bao (2025) stated that digital IP upgrades the cultural industry by activating cultural symbols, innovating production models and fostering new integrated business forms. Based on digital IP empowerment, English short videos, bilingual posters, virtual exhibitions and cultural relic English explanations make translations more intuitive and appealing. Multimodal expression bridges linguistic gaps, strengthens English interpretations of cultural symbols and improves overseas audiences' understanding and acceptance.

#### 5) Mechanism Guarantee Path: Data-Driven and Closed-Loop Optimization of Translation and Communication

Haliya (2024) pointed out that cultural differences in historical background, ideology and translator subjectivity pose challenges in publicizing translations of Chinese Northern Borderland Culture. Therefore, AI tools are used to monitor English communication data, analyzing views, engagement, completion rates, audience geography and preferences to establish an evaluation system linking translation and communication effects. According to overseas audience feedback, English expressions, terminology, sentence structure and narration are adjusted timely, forming a human-machine collaborative closed loop: "Translation Generation-Content Release-Data Feedback-Translation Optimization", which can continuously improve the accuracy and international adaptability of English translations.

#### 6) Discourse System Construction: Building International Expression Centered on Standardized English Translation

Discourse content shapes the quality of expression (Zhang, 2025). Yang and Shi (2025) proposed suggestions for constructing the external discourse system of Chinese Northern Borderland Culture in Inner Mongolia: constructing a unified communication strategy, strengthening accurate translation and interpretation of cultural symbols, targeting audiences precisely and using diverse channels, and innovating communication forms to enhance interactivity. Guided by these suggestions, AI term bases are used to unify English expressions of historical place names, ethnic titles, and cultural spirits, avoiding excessive localization, rigidity and Chinglish. Universal values and emotional resonance are highlighted to enhance affinity, recognition and influence with clear, concise and appropriate international discourse. Based on standardized English translations, an external discourse system centered on ethnic integration, ecological wisdom, inter-civilization mutual learning and borderland harmony is constructed to strengthen the international communication capacity of Chinese Northern Borderland Culture.

To make high-quality translation and effective communication more concrete and measurable, four core evaluation dimensions can be adopted: first, terminological consistency, which measures the uniformity of core cultural concepts and

historical proper nouns across different texts and platforms; second, translation readability, which examines whether English expressions conform to the language habits of target audiences and reduce comprehension barriers; third, cultural appropriateness, which judges the accuracy of conveying cultural connotations, historical contexts, and ethnic emotions to minimize cultural discount; fourth, communication effectiveness, which assesses the actual dissemination impact through overseas audiences' reading volume, engagement rate, and acceptance feedback.

## 5. Conclusion

This study systematically examines the present, problems and optimization paths of the English translation and international communication of Chinese Northern Borderland Culture under AI empowerment. The findings show that driven by the "Going Global" initiative of Chinese culture and the Chinese Northern Borderland Culture Development Campaign, certain progress has been made in the English translation of Chinese Northern Borderland Culture in academic classics, literary works, tourism signage and digital communication, forming a basic pattern led by classic translation, supported by academic translation, popularized by tourism promotion and expanded by digital platforms, with steady improvements in terminology, channels and digital development. Meanwhile, prominent problems such as inconsistent terminology, superficial interpretation of culturally loaded words, Chinglish expressions, unattractive content, weak overseas platforms and disconnection between translation and communication remain major bottlenecks for high-quality global communication.

AI translation enjoys obvious advantages in efficiency, multilingual conversion, terminological consistency and formatting standardization for Chinese Northern Borderland Culture texts, significantly improving large-scale translation efficiency. Yet it has limitations in conveying cultural connotations, restoring historical contexts and representing ethnic emotions, and must follow the four principles of cultural fidelity, terminological unity, audience orientation and collaborative complementarity, adopting a "AI + human" collaborative model. On this basis, this study constructs an integrated AI-empowered path for English translation and international communication from six dimensions: communication concept transformation, intelligent content production, global communication matrix, multimodal visual presentation, data-driven closed-loop optimization and international discourse system construction, promoting the shift from fragmented, disconnected and superficial application to systematic, coordinated and in-depth integration of translation and communication.

As an important component of the multi-integrated pattern of Chinese culture, the precise English translation and effective international communication of Chinese Northern Borderland Culture are of great significance for showcasing borderland cultural features, promoting ethnic cultural exchanges and gradually enhancing the global influence of Chinese culture. The organic integration of artificial intelligence, digital humanities and translation practice of Chinese Northern

Borderland Culture, the improvement of term and translation memory bases, the enhancement of precise interpretation of culturally loaded words, and the optimization of international expression and narration can help contribute to improving translation quality and communication efficiency. This study provides theoretical references and practical implications for the international communication of Chinese Northern Borderland Culture and similar borderland ethnic cultures. Future research can be further expanded in the construction of special corpora, localized training of AI models and empirical research on cross-cultural acceptance.

## Acknowledgements

We would like to express our sincere gratitude to Foreign Languages College of Inner Mongolia University.

## Funding

The current study is sponsored by Inner Mongolia Social Science Fund Project (Grant No. 2025WY28).

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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