

Research on Tourism Website Content Translation Strategies Based on Machine Translation and Artificial Intelligence

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Abstract

With the deepening of economic globalization, cross-border tourism is becoming more and more popular. Many foreign tourists choose to book and make travel plans through tourism websites when they travel across the border, so the translation of cross-border tourism website content is very important. The quality of content translation of cross-border tourism websites can directly affect the effectiveness and accuracy of information transmission, and even affect the cultural transmission of a country. In recent years, with the rapid development of science and technology, the progress of machine translation and artificial intelligence has provided technical support for the content translation of tourism websites. However, how to effectively convey cultural characteristics in the translation process, so that the translated content can not only accurately convey information, but also convey feelings, spread culture, and promote marketing, has become a topic that needs to be further discussed. By analyzing the translation strategies and problems of the content of tourism e-commerce platforms, this paper aims to explore how to effectively translate the content of cross-border tourism websites through machine translation and artificial intelligence, so as to promote cross-cultural communication, attract cross-border tourists and promote economic development.

Keywords

Tourism Websites Content; Translation Strategies; Linguistics; Machine Translation and Artificial Intelligence; Intercultural Communication.

1. Introduction

1.1. Research background

With the development of economic globalization and the lifting of the prevention and control policies of covid-19 epidemic, the number of cross-border tourism has surged in recent years, and more and more tourists obtain tourism information and book related tourism products through cross-border tourism websites. eTourism connects travel providers and consumers via the Internet, enabling travel products and services to be promoted and sold globally [7]. Cross-border travel websites such as Ctrip, Booking.com, TripAdvisor and Airbnb can offer a wide range of travel products and services to cross-border travelers. Due to cultural differences and language barriers, the quality of translation of platform content will directly affect cross-border travelers' understanding and experience of the destination, and even affect their satisfaction with a country and cultural identity of the country. Therefore, the content of the tourism e-commerce platform needs to be considered from many aspects in the translation, in order to achieve effective cross-cultural communication and marketing. At present, the content translation of many travel e-commerce platforms still has problems such as language errors, improper grammar and inaccurate wording, which affect users' understanding and trust. In

addition, cultural differences may also cause translated content to fail to meet the expectations of local users, or even cause misunderstanding or aversion. This paper aims to explore the current content translation strategies based on machine translation and artificial intelligence for tourism e-commerce platforms, analyze the effectiveness of these strategies under linguistic theory, and propose corresponding improvement measures to improve the translation effect.

1.2. Research significance

Explore the content translation strategy of cross-border tourism websites based on machine translation and artificial intelligence, in practice, it can provide reference for cross-border tourism e-commerce platforms to further improve the travel experience of cross-border tourists, and constantly optimize and upgrade machine translation and artificial intelligence technology to improve efficiency and save costs; In theory, it can provide new research cases and directions for translation and linguistics researchers.

2. Literature Review

2.1. Linguistics related translation strategy theory

2.1.1. Functional translation theory

Functional translation theory, proposed by German scholars Katharina Reiss and Hans J. Vermeer, emphasizes the purposefulness of translation^[4]. The translation should be adapted to the intended function and the needs of the target audience. This theory is applicable to the translation of tourism texts, because the main purpose of tourism texts is to attract tourists and convey information.

2.1.2. Translation equivalence theory

Translation equivalence theory, proposed by Nida^[5], emphasizes the equivalence between source language and target language in terms of meaning and effect, including formal equivalence and dynamic equivalence. For tourism texts, dynamic equivalence is more important, that is, the translation should arouse similar reactions between the target readers and the original readers.

2.1.3. Domestication and foreignization strategies

Venuti^[3] proposed domestication and foreignization strategies. Domestication makes the translation close to the target culture and easy to understand; Foreignization preserves the cultural characteristics of the source language and maintains the exotic flavor. Tourism text translation needs to find a balance between the two to achieve the goal of conveying cultural characteristics without causing misunderstanding^[6].

2.2. Current research status

The development of information technology provides new tools and means for tourism e-commerce platforms, which provides a technical background for in-depth research on content translation strategies^[7]. However, despite the continuous progress of machine translation technology, its application in the professional field of tourism is not mature enough to completely replace human translation^[8].

2.2.1. Machine translation and human-machine collaboration

At present, the application of Neural Machine Translation (NMT) technology in the field of tourism has made great progress. Google's neural machine translation system (GNMT) has significantly improved the translation quality^[10], providing the technical basis for large-scale content translation of travel websites. Some research is focusing on optimizing the NMT model for the tourism industry so that it can better handle the specialized terminology and language styles of the tourism sector. Machine translation will also affect the marketing of travel products.

Liao and Li^[9] conducted an in-depth analysis of the application of machine translation in travel text and found that machine translation has significant shortcomings in processing travel text, which can negatively impact marketing effectiveness, especially in emotional and cultural translation. Toury's^[12] study emphasized the importance of cultural factors in translation. Although machine translation can improve translation efficiency and save labor costs to a certain extent, there are still major challenges in machine translation when dealing with emotional expression and cultural differences, and human-machine collaboration is needed to complete the translation content. In terms of human-machine collaborative translation, the predictive translation memory system proposed by Green et al. ^[11] demonstrates the potential of combining machine translation with manual post-editing. This kind of collaboration not only improves the efficiency of translation, but also ensures the quality of translation, which meets the needs of tourism websites for timeliness and accuracy of content.

2.2.2. Application of artificial intelligence in smart tourism

Gretzel and Jamal^[1] discussed the correlation between artificial intelligence and smart tourism, pointing out that the application of AI technology in intelligent tour guidance, voice translation, personalized recommendation and other aspects has improved the intelligence level of tourism services. Among them, AI technologies such as data analysis and user behavior prediction have played an important role in improving the travel experience. Park and Ohm^[2] studied the role of mobile translation applications in the travel experience and found that speech recognition and instant translation technologies can help tourists overcome language barriers and improve travel satisfaction. The application of speech recognition and translation technology in the field of tourism interpretation aims to solve the communication barriers caused by the language barrier of tourists in the destination. Weiss et al^[14]. propose an end-to-end sequence-to-sequence model that can directly translate foreign speech into the target language. This model breaks through the traditional step processing method of speech recognition and machine translation, and directly generates the translated text of the target language from the speech signal of the source language, reduces the accumulation of errors that may be introduced in the intermediate step, and improves the accuracy and efficiency of translation. For tourism interpretation, this technology can provide real-time voice translation services for tourists and improve the convenience of cross-cultural communication. In addition, the role of multilingual support and localization in the development of tourism website globalization cannot be ignored. The multilingual NMT model proposed by Johnson et al.^[14], which is completely based on neural networks, realizes the translation function of a single model supporting multiple languages, providing the possibility for tourism websites to realize the translation and localization of multi-language content at one time.

3. Analysis of Current Tourism Website Content Translation Problems and Improvement Strategies

3.1. Inaccurate translation of professional terms

A travel website incorrectly translated "suite" as "clothes suit" instead of "suite of hotel", which could lead to misunderstandings when foreign tourists book rooms, affecting room sales and hotel reputation. From the perspective of functional translation theory, the translation fails to realize the function of transmitting accommodation information effectively. From the perspective of equivalence theory, mistranslation leads to the deviation of meaning and fails to realize formal equivalence, and tourists may misunderstand the type of accommodation, so dynamic equivalence is not realized. The translation here should adopt the naturalization strategy to correctly translate "suite" into the corresponding "suite" in the target language, so as to help foreign readers accurately understand the industry terms. The travel industry is full of industry-specific terms such as accommodation, names of attractions, and so on. If the

translation is not accurate, it may mislead tourists, affect the user's travel experience and even affect the travel efficiency. To solve this problem, tourism websites can train neural machine translation models specifically for the tourism industry, including tourism professional terms and common expressions, to improve translation accuracy. At the same time, a large number of bilingual corpus of tourism industry can be collected, and domain adaptability training can be carried out to make the model familiar with travel-related vocabulary and expression.

3.2. Mistranslation caused by cultural differences

China's "Qingming Festival" is directly translated as "Tomb-Sweeping Day", but no background is provided, and foreign visitors may not understand its cultural connotations. In translation, the direct translation of culture-specific festivals or customs may lead to the target audience not understanding the cultural background behind it, causing confusion for tourists. From the perspective of functional translation theory, the translation directly translates without explaining the cultural background, which makes the passengers unable to understand the meaning of the text and fails to realize the communicative function of the language. From the perspective of equivalence theory, although formal equivalence is realized in the literal sense, due to cultural differences, target readers cannot get the same understanding and feeling as the source readers, and dynamic equivalence is missing, so supplementary interpretation is needed to achieve effective equivalence. The direct translation as "Tomb-Sweeping Day" belongs to the foreignizing strategy, which retains the characteristics of the source culture, but the lack of explanation may lead to comprehension obstacles. Therefore, the domestication strategy should be combined with providing background information or adopting similar concepts in the target culture to effectively promote understanding and realize the balance of the two theories. Major cross-border travel websites can integrate cultural background knowledge base, combined with cultural background knowledge, provide annotations or explanations for specific cultural terms and customs, and establish databases containing festivals, customs, and historical background. In machine translation, explanations are automatically carried out to promote foreign tourists' understanding of different customs and festivals.

3.3. Insufficient translation of emotional and propaganda language

The slogan "让心灵去旅行" is translated as "Let the heart travel", although it directly translates the meaning of the original text, but the expression effect is not as vivid as the original image. Travel websites often use emotional and appealing slogans. If the translation is not vivid enough, it may not stimulate the interest of the target audience and reduce the marketing effect. From the perspective of functional translation theory, the purpose of propaganda language is to attract tourists and stimulate the desire to travel, but literal translation fails to convey the emotion and appeal of the original text, and cannot fulfill the propaganda function. From the perspective of equivalence theory, literal translation may be equivalent in form, but not in emotional effect, which fails to cause similar reactions between the target readers and the original readers. Free translation or creative translation can achieve the equivalence of emotion and effect. In the translation of propaganda language, the domestication strategy is relatively more effective, and the use of infectious expressions in the target language can be close to the readers' culture and emotional habits, and stimulate their emotional resonance. Cross-border tourism platforms can use artificial intelligence's emotion analysis technology to identify emotional elements in the original text, maintain or enhance these emotional states in translation and generate corresponding expressions. Platforms can also work together to develop models that can detect emotional words and use the same emotive expressions and corresponding rhetorical devices in the target language in translation. In this section, platforms can also combine machine translation with human post-editing, leveraging both machine efficiency and human flexibility. Machine translation can be used to generate the first draft, professional translators for proofreading and polishing, improve efficiency and save labor costs.

3.4. Insufficient understanding of polysemy and context

In articles describing the "ancient city wall," the word "wall" has repeatedly been incorrectly translated as "wall" instead of "city wall." When machine translation deals with polysemous words, it may not be able to choose the most appropriate translation method according to the context, which leads to the deviation of the translated content. From the perspective of functional translation theory, mistranslation leads to the deviation of information transmission and fails to achieve the communicative purpose. From the perspective of equivalence theory, the translation fails to choose the correct meaning according to the context, and does not achieve equivalence in meaning, which affects the reader's understanding. In polysemous words and synonyms, domestication strategies should be used to select appropriate words in the target language, so that passengers can understand them easily. Platforms can use context-aware translation models to accurately deal with polysemous words and complex sentences. Advanced deep learning models such as Transformer architecture can also be used to provide more accurate translation results combined with contextual information.

3.5. Insufficient Localization

One travel website still uses kilometer, commonly used in China, instead of mile, commonly used abroad, in the English version, causing foreign users to convert themselves. The lack of localization consideration for the target market may increase the user's difficulty and reduce the user's travel experience. From the perspective of functional translation theory, the insufficient localization of translation increases the use barrier and violates the functional requirement. From the perspective of equivalence theory, although the unit itself does not have translation errors, it does not achieve equivalence in function, and readers cannot directly obtain the required information. In some respects, domestication strategy is equivalent to localization of translation, in this case, the translation needs to convert the information into the target market's customary units and formats, so as to be close to the readers' cultural habits and improve the convenience of travel. Each platform needs to introduce automated localization tools to automatically adjust the measurement unit, currency, date format, etc., according to the user's region, integrate localization modules in the background of the website, and use the user's IP address or language Settings to dynamically and intelligently present content that conforms to local habits.

4. Conclusion

By analyzing the current situation of content translation of tourism e-commerce platforms based on machine translation and artificial intelligence, this paper finds that the current content translation of tourism websites mainly has problems such as inaccurate translation of professional terms, mistranslations under cultural differences, insufficient translation of emotional and propaganda languages, insufficient understanding of polysemy and context, and insufficient localization. This paper also puts forward some practical measures in the field of machine translation and artificial intelligence, such as constructing a travel-specific machine translation model, integrating cultural background knowledge base, strengthening the translation of emotion and propaganda, adopting context-aware translation technology, and introducing automatic localization tools. High-quality translation of tourism website content is of great significance for promoting cross-cultural communication, enhancing user satisfaction and enhancing market competitiveness. Combining machine translation and artificial intelligence technology to formulate effective translation strategies for the special needs of the tourism industry can effectively solve the problems existing in the translation of the current cross-border tourism platform. In the future, the platforms should further strengthen human-machine collaboration, continuously optimize the translation model, deeply explore the

processing methods of emotional and cultural factors in translation, and promote the global development of tourism e-commerce platforms.

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