



Research on AI Translation in Cross-border E-commerce Scenarios

Wanmin Zhang, Cui Jing, Wenhai Xu *

Hainan Vocational University of Science and Technology, Haikou 571126, Hainan, China

Abstract: This study investigates AI translation technologies, multilingual translations, and ChatGPT re-translation across four major cross-border e-commercial platforms. Through technical parameter comparisons, this paper analyses, by empirical experiments, and examines the technical characteristics of platform-based AI translation, their strategic differences, and ChatGPT's adaptation capabilities. The research further discusses the evolving roles of translators. The results indicate that while these four platforms primarily utilize Neural Machine Translation (NMT) with distinct focuses, ChatGPT demonstrates superior cultural adaptability, whereas the platform-based AI translations excel at commercial narrative alignment. These findings provide valuable references for cross-border e-commercial platforms to enhance translation quality and reconstruct the role of translator.

Keywords: cross-border e-commerce; AI translation; ChatGPT re-translation; multilingual translation; the role of translator

1. Introduction

As cross-border e-commerce has become a vital driver of global trade, translation directly impacts the delivery of product information and consumer decision-making. Four leading sales platforms, Temu, AliExpress, Shein, and Amazon, widely adopt AI translation, while challenges persist, including inconsistent technical approaches and varying cultural adaptation effectiveness. The emergence of generative AI systems like ChatGPT has opened new possibilities for translation, prompting re-evaluation of the role of translator. This study intends to conduct an in-depth analysis of AI translation in cross-border e-commerce scenarios, aiming to enhance language services of sales platform and chart a course for translator's development in the AI era.

2. AI translation technology of cross-border e-commerce platforms and features of multilingual translation

2.1 AI translation technology of main cross-border e-commerce platforms

The above mentioned four platforms, Temu, AliExpress, Shein and Amazon, all utilize neural machine translation (NMT) as their core technology, though with distinct technical implementations (Table 1). Amazon leverages AWS cloud services to build a "multimodal NMT + real-time contextual adaptation" model, data covering product descriptions and user reviews, achieving the highest accuracy in English-Chinese and Chinese-Japanese translations. Temu employs "lightweight NMT + rule engine correction", reducing mistranslation in minor languages through industry-specific term databases. AliExpress and Shein focus on "sentiment-driven NMT," enhancing appeal by incorporating the consumer preference data. In terms of efficiency and iteration, all the platforms respond within 0.5-2 seconds. Amazon and AliExpress update their models monthly, while Temu and Shein adopt the approach of "major quarterly updates + minor monthly optimizations". On language coverage, Amazon supports over 20 languages, AliExpress and Shein focus on 15+ languages, and Temu prioritizes Chinese-English translation and Chinese-Dutch one.

Table 1. Comparison of core parameters of AI translation technology of the four cross-border e-commerce platforms

Platform	Core technical architecture	Training data dimensions	Response time	Model iteration frequency	Key languages covered
Amazon	Multimodal NMT+AWS cloud service support	Product description, user's review, transaction data	0.5~1.2s	Monthly	English-Chinese, Chinese-Japanese, German-Chinese
AliExpress	sentiment-driven NMT+ consumption preference data fusion	Product description, user's behavior, market trends	0.8~1.5s	Monthly	English-Chinese, Chinese-Dutch, Spanish-Chinese
Shein	Lightweight NMT+ clothing category term base	Product description, fashion trends, user's feedback	0.6~1.3s	Quarterly	English-Chinese, Chinese-Japanese, French-Chinese
Temu	Lightweight NMT+ rule engine fixes	Product description, industry terminology database	0.7~1.8s	Quarterly	English-Chinese, Chinese-Dutch, Italian-Chinese

2.2 Translation strategies of multilingual versions and differences in business narratives

In translation strategies, Amazon and AliExpress adopt domestication, such as translating “性价比高” into “great value for money” (Amazon), to align with target market, while Shein and Temu employ foreignization, in apparel categories, translating “国风刺绣” into “Guofeng embroidery” (Temu), to preserve cultural characteristics [1]. Regarding commercial narratives, Amazon emphasizes data-driven approaches by incorporating sales amount and ratings, while AliExpress and Shein focus on “contextualization” through scenario-based associations. Temu utilizes a simplified style, providing short sentences to optimize for mobile reading, which fundamentally reflects the platforms’ commercial positioning.

3. Empirical study of ChatGPT re-translation and comparative analysis of AI translation versions

3.1 Experimental design for re-translation based on European commercial version of ChatGPT

This study selects 50 texts of product description from the above mentioned platforms, using the European commercial version of ChatGPT as a re-translation tool with unified translation parameters. The target languages are English, Japanese and Dutch, with a style of “business formal + cultural adaptation” and highly contextual relevance. During the experiment, we simultaneously record ChatGPT’s response time, term accuracy, and cultural adaptability, and compare them with the original platform’s AI translation [2]. Experimental data shows ChatGPT demonstrates stronger context-adapting capabilities in multilingual re-translation: in Chinese-Dutch translation scenario, it translates “智能控温” into Dutch “intelligente temperatuurregeling”, aligning with the Dutch market’s terminology for “smart home appliances”, whereas the original platform uses “intelligente warmtebeheersing”. In Chinese-Japanese translation, ChatGPT does “静音设计” into “静音デザイン”, matching Japanese consumers’ expectation of silence in home facilities. This aligns with Amazon and AliExpress translations but outperforms Shein’s slightly stiff “静かなデザイン”.

3.2 Comparison of core dimensions between the two AI translations

ChatGPT demonstrates superior quality and cultural adaptability, especially in translating between Chinese and some minor languages (such as Dutch) and in cultural-specific terms, where its scores better at platform-based AI translation. However, AI translation of the above mentioned platforms excels at work efficiency and commercial narrative alignment. The average work time is 0.3 ~ 0.8s shorter than ChatGPT, also with a better align with their own commercial narrative strategies [3]. In localization, ChatGPT effectively addresses cultural taboos and consumption preferences by integrating European market. For instance, in Chinese-Dutch translations, it avoids sensitive Dutch terms like “cheap” and opts “budgetvriendelijk” instead. Moreover, AI translation of some platforms still confront cultural misalignment caused by literal translations. Notably, ChatGPT’s commercial narratives lack targeted customization, with translations failing to incorporate platform-specified elements, which requires manual adjustment to adapt to cross-border e-commerce contexts.

4. Reconstruction of the role of translator on cross-border e-commerce in the era of AI translation

4.1 Switching of the role of translator

AI translation hasn’t replaced human translators but transformed them from language converter into AI collaboration manager. Traditional translators previously devoted 70% of their efforts to language conversion, but currently these are the core functions of a translator: AI translation review and optimization (45%), cultural adaptation calibration (30%), terminology database construction (15%), and data annotation (10%)[4]. For instance, after ChatGPT makes “Guofeng embroidery”, translator should check the expression according to platform requirements and supplement “a traditional Chinese style” as an extra explanation.

4.2 Development of translator

To excel in translation, translator should develop diverse skills integrating language excellency, technical expertise and business orientation. This requires deepening cultural understanding of minor languages, mastering AI parameter configuration and possessing a great management of terminology, as well as comprehending platform operation mechanisms[5]. Furthermore, establishing continuous learning frameworks, tracing AI technological development and refining workflows through case studies are also essential.

5. Conclusion

AI translation of these four cross-border e-commerce platforms, Amazon, AliExpress, Shein and Temu, takes NMT as the core, but each has its own focus in terms of technical aspect. The multilingual translation strategy is influenced by their commercial positioning. Amazon and AliExpress tend to adopt domestication, while Shein and Temu focus on foreignization. The commercial narratives respectively present the characteristics of datafication, contextualization and simplification. ChatGPT has better contextual adaptation and cultural processing capabilities in multilingual re-translation, but AI translation of these platforms has more advantages in translation efficiency and adaptability to business narratives. In the AI era, translators need to transform from language converters to AI collaborative managers, focusing on tasks such as translation review and cultural calibration, while building a composite capability of “language + technology + business”.

Acknowledgments

This paper was supported by the following fund projects: Doctoral project of Hainan Vocational University of Science and Technology, “Research on AI Translation in Cross-border E-commerce Scenarios” (Project No. HKKY2024-BS-21); Doctoral project of Hainan Vocational University of Science and Technology, “Research on High-quality Development of Cross-border E-commerce in Hainan Free Trade Port” (Project No. HKKY2024-BS-03).

References

- [1] Zhao Chen and Zhang De. The Evolution of Self-Attention Mechanisms: From Transformers to DeepSeek-R1: A Leap in Deep Semantic Understanding [J]. *Internet Weekly*, 2025(16):20-23.
- [2] Wu Fangyan, Chen Shiqin, and Yan Chunjing. A Study on Business English Translation Techniques in Cross-border E-commerce Platforms from the Perspective of Translation Purpose [J]. *Modern Commerce Industry*, 2023,44(14):91-93.
- [3] Zhu Shijia. Application of Artificial Intelligence Translation Technology in Cross-border E-commerce Apparel Product Description [J]. *Chemical Fibers and Textile Technology*, 2025,54(4):48-50.
- [4] Yang Ni. Construction of Cross-border E-commerce Product Translation Analogy Corpus and Vocabulary Feature Research — Taking Running Shoes as an Example [J]. *Journal of Taiyuan City Vocational and Technical College*, 2024(2):190-193.
- [5] Su Xiaoyan. Application Research on English Translation Principles and Techniques in Cross-border E-commerce Trade of Agricultural Products in Guangxi [J]. *Digital Agriculture and Intelligent Agricultural Machinery*, 2024(5):105-108.
- [6] Wen Hui, Li Long. Research on Artificial Intelligence Application in Translation for Cross-border E-commerce Platforms in the Digital Economy Era [J]. *SME Management & Technology*, 2025(12):123-125.

Author Bio

Wanmin Zhang (1969.7-), female, Han Chinese, native of Gaomi, Shandong, Ph.D., Professor, currently teaching at the Foreign Language Department of Hainan Vocational University of Science and Technology. Research areas: Translation studies, Western literary theory.