| **RESEARCH ARTICLE**

Cross-Border E-commerce Product Introduction: Needs and Characteristics for Localized Machine Translation

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| **ABSTRACT**

With the development of science and technology and the rise of international trade, cross-border e-commerce platforms play an important role in international trade. While machine translation plays a crucial role in the introduction of goods in cross-border e-commerce, many machine translations have limitations, such as inaccurate descriptions and not conforming to Internet trends and cultural conflicts. Therefore, this study aims to investigate the characteristics of localization translation and apply them to the establishment of a machine translation corpus. By conducting questionnaires, this paper analyses the translation characteristics and user needs of cross-border e-commerce product introductions. The results found that product introduction translation needs to have the following characteristics: accurate description, comprehensive description, vivid description, concise description, and cross-cultural homogeneity. Based on the analysis, this study raises credible and valid suggestions and provides insights into building a machine translation corpus.

1. Introduction

Since the reform and opening up, the exchanges between China and foreign countries have expanded in many fields, and commercial trade has been developing continuously. How to make foreign commodities correctly known to Chinese people is an urgent problem for China (Sun, 2022). China has adopted many translation strategies and skills for the translation of the introduction and the promotion copy carried by overseas commodities.

Currently, many studies have focused on English translation in cross-border e-commerce, such as translation quality, translation efficiency, and translation cost (Xu & Han, 2022; Chen, 2023; Tian, 2023). These studies are crucial to the development and optimization of cross-border e-commerce (Fang et al., 2023). But with the widespread use of artificial intelligence translation software, the skills of cross-cultural business English translation are easily overlooked (Wang, 2023). Based on the characteristics of business English translation, this paper mainly studies the cross-cultural communicative terms used in the introduction and the promotion copy of cross-border e-commerce products. High-quality product copies can effectively reduce the time cost of customer consultation, optimize the user experience, and improve the conversion rate (Liu & Wang, 2023). In terms of cross-cultural communication, business English vocabulary is highly professional and uses a large number of abbreviations, such as IMF (International Monetary Fund) and D/P (Documents against Payment) (Shen, 2023). These words may face some difficulties in the process of machine translation, resulting in ambiguity.

Our study is based on cross-cultural communication, exploring the translation terms and skills. This paper mainly investigates the linguistic features, consumption preferences and values of English-speaking countries.

2. Literature Review

2.1 Machine Translation in Cross-border E-commerce

In the context of globalization, research on the field of cross-border e-commerce is gradually emerging. The English translation of product introductions also plays an important role in this process (Zheng, 2023). Every translation action has a purpose, which is to spread specific information to specific audiences and meet their communicative and cultural needs. Translation is a discourse produced for a certain purpose and target audience in the context of the target language (Nord, 2001). Concise, novel translations can accurately convey product information but also can attract customers and increase their desire to buy. With the development of science and technology, machine translation has become the choice of most enterprises. Due to the quality and timeliness of machine translation being more attractive to enterprises than vivid product descriptions, cross-border e-commerce enterprises tend to adopt the form of machine translation.

Machine translation is being widely used. Previous research has established that driven by the market, the commercial machine translation system has entered the practical stage, and the e-commerce web page translator is a widely used machine translation product (Zheng, 2023). Although most machine translations still need to be manually edited later, machine translation is the ideal solution for text translation based on information (Zhao, 2019). In addition to the acceptability of language, culture is another important factor. There are differences in thinking styles, behavioral habits, values, and other aspects between Eastern and Western people, which lead to political, economic, and commercial activities (Chen, 2020). Some scholars (Yang & Du, 2018; Han, 2019) have summarized translation strategies based on the cultural differences between China and Western countries, which can be applied to the improvement of machine translation. In the process of business English translation, we should have enough understanding of Western cultural background and translate according to Western thinking and language habits, avoiding Chinese expressions (Han, 2019).

So far, however, there has been very little discussion about e-commerce language translation. E-commerce language text has the characteristics of strong sales directivity, diversification, and fragmentation. However, most e-commerce machine translations have not established a personalized corpus for people in different countries. It can be concluded that machine translation is not flexible to cultural differences (Hu & Li, 2023). Some scholars have proposed that there are three main problems in the Chinese-English translation of e-commerce product introductions (Zhou, 2018). First, most clients in developing countries have different levels of proficiency in English and different understanding of translation. Second, there are significant differences in development and economic levels between countries. Therefore, when translating product introductions, different countries with different types of development have different requirements for product characteristics. Third, the popularity of e-commerce is different, and the acceptance of foreign things is different. If these factors are not taken into account, ordinary machine translation will arouse their disgust. Therefore, in view of these points, we need to improve machine translation so that it can be flexibly applied in e-commerce communication.

2.2 Construction of a Cross-border E-commerce Machine Flip Corpus

Previous studies have shown that our country, in the whole chain of cross-border e-commerce, belongs to the middle link of the value chain, and the development of the platform is in an important period of transformation and development. If we rely solely on the platform and ignore the issue of product personalization, there is a more serious phenomenon of product homogenization, which will affect cross-border e-commerce network marketing (Yu, 2022). Therefore, cross-border e-commerce enterprises should communicate directly with customers through product channels to realize the effective attraction of product introduction to customers (Wang, 2023).

Another point known from relevant studies is that cross-border e-commerce will be affected by cultural differences in the marketing process, especially when the marketing of cross-border e-commerce is carried out through online platforms, which is characterized by virtuality, and there are certain problems under the influence of cultural differences such as values, language, and customs. Consumers usually avoid the uncertainty of things and unfamiliar products when carrying out consumption activities, especially for international commodities, so the generation of biased translations can cause consumer resistance (Wang, 2021).

The academic community currently believes that cultural differences are mainly reflected in national beliefs, values, habits of life and behavior, and social systems (Ke, 2021). Taking the cultural differences between Chinese and Western cultures as an example, the famous Fujian tea "Dahongpao" is often translated as "Red Robe", which does not convey the Chinese idea that "red color represents festivity, joy, and good luck", because in Western culture, "Red Robe" stands for bloodshed and brutality, and adopting such a direct translation may lead to misunderstanding of the product among Western consumers because of the English translation of the brand name (Wang, 2023). When consumers have negative feelings about the product because of the directly translated name, it is easy to reduce the purchase rate of users, thus making the product a "slow-selling product". Despite the huge impact of cultural differences on cross-border e-commerce translation, there is little research examining this issue.

Further, the current corpus construction for machine translation in cross-border e-commerce is not robust (Meritxell et al., 2016), and some companies do not even have a corresponding referable corpus for translating product descriptions. Machine translation systems have a single word choice and tend to use high-frequency expressions (Gao, 2022; Liang & Liu, 2023).

There are four main ways to build language translation services for cross-border e-commerce: cross-border e-commerce enterprises build language translation service platforms by themselves, cross-border e-commerce enterprises and sellers build language translation service platforms together, cross-border e-commerce enterprises localize and co-construct, and language service providers participate in co-construction (Liu, 2021). Of the above four approaches, the cross-border e-commerce enterprise localization co-construction mode, which means that the translation is completed by native translators from the country or region where the target language is spoken, and the translated text resulting from this translation mode is more localized and conforms to the customs and language habits of the target place, is most similar to the effect expected to be achieved by this study. However, the current language service market has problems of varying talent levels and a disconnect between enterprise talent needs and university talent training (Zhang & Chen, 2023), so this study considers converting manual localized translation into establishing a localized corpus for machine translation as a good way to solve the current cross-border e-commerce language translation service problems.

Based on the above, this study aims to build a personalized translation corpus for different groups of people, and the content of the corpus mainly focuses on the localized phrases for translation, with the research goal of building a corpus that considers the differences between Chinese and Western cultures and the habits of linguistic expression. In addition, for the specialization, convenience, and efficiency of translation characteristics of business English (Gao, 2019) and the e-commerce language text has an immediacy, this study will also tend to study the construction of an efficient translation corpus, which will in turn increase the users' purchasing rate.

3. Methodology
3.1 Hypotheses
This study predicted the results in advance, making the following hypotheses:

1. In terms of vocabulary use, the description of goods should use more accurate and localized vocabulary.
2. In terms of sentence organization, the description of goods should be clearer and more explicit.
3. In terms of discourse integration, the description of the goods should be in line with the culture of the country concerned.

3.2 Methods
Aiming at the existing problems of machine translation, this paper proposes that corpora should be built for different groups to address the problem of cultural differences leading to insufficient flexibility in machine translation. Based on the establishment of a corpus for different groups, big data collection is carried out through user usage habits to launch a fully personalized translation corpus. By analyzing the contrast between human translation and machine translation, this paper hopes to explore the issues that need attention in building a corpus.

This study plans to compile a questionnaire to collect respondents' views on product introduction on cross-border e-commerce platforms and the characteristics they think should be possessed in product introduction translation. This study plans to issue questionnaires to college students, that is, users who frequently use e-commerce platforms. Through their feedback, we can get more accurate data and analysis and find out the trend. After collecting the questionnaires, we will conduct an SPSS analysis of the survey data to analyze its reliability and validity.

After gathering enough data, it will be analyzed from three aspects: use of vocabulary, organization of sentences and integration of discourse, drawing on the theory of functional equivalence and the characteristics of cross-border e-commerce (Xiao & Zhang, 2022) English translation. Then, through the systematic categorization of the collected text data corresponding to the characteristics of business English translation, the relevant contents that can be referred to when building an effective corpus are derived. Finally, the content derived from the previous step is optimized by combining the linguistic and cultural differences between Chinese and Western countries.

4. Results and Discussion
4.1 The Data Collected
The results of the recent survey indicate that 109 out of the 133 valid questionnaires were completed through the utilization of e-commerce platforms. Furthermore, it was observed that these individuals tend to pay particular attention to the product introduction during the usage process. Figure 1 provides conclusive evidence that the product introduction holds a significant

impact on consumers' purchase intentions. This underscores the importance of crafting an effective and engaging product introduction that can effectively persuade potential customers to make a purchase.
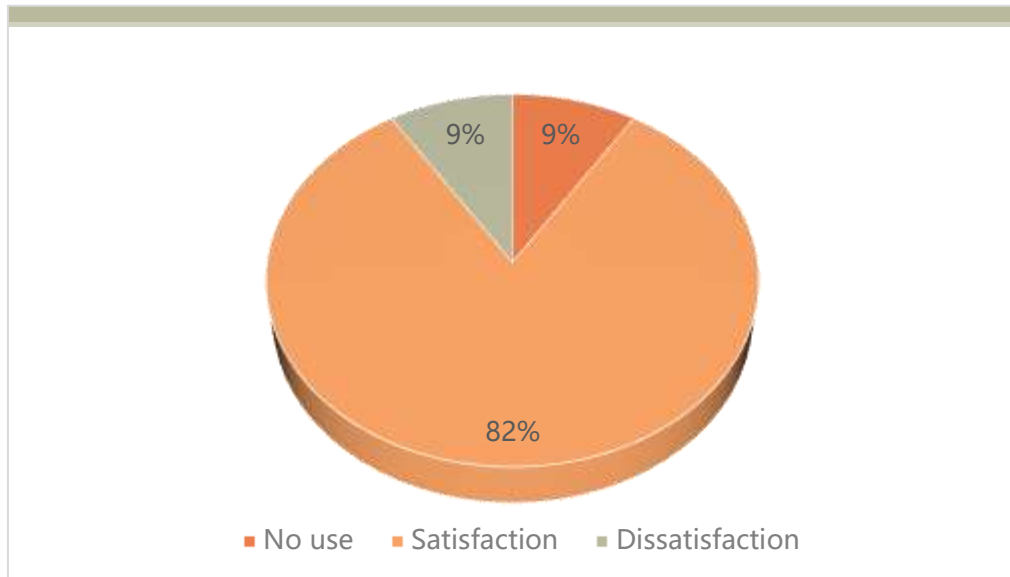

Figure 1. Satisfaction with product introduction translation

In conducting a questionnaire survey, it was revealed that a significant majority of respondents expressed dissatisfaction with the translation of foreign product introductions. As depicted in Figure 2, the primary sources of dissatisfaction stem from perceived bluntness in the choice of words, a deviation from conventional linguistic patterns, and inaccuracies in the portrayal of product attributes. These findings align with our initial hypothesis that machine translation often suffers from a lack of localization and descriptive precision. Additionally, a minority of respondents expressed concerns over the translation of product introductions conflicting with cultural norms, corroborating our previous assumption that the translation corpus for product descriptions ought to adhere to national cultural sensibilities and accurately adapt expressions to account for cultural disparities.
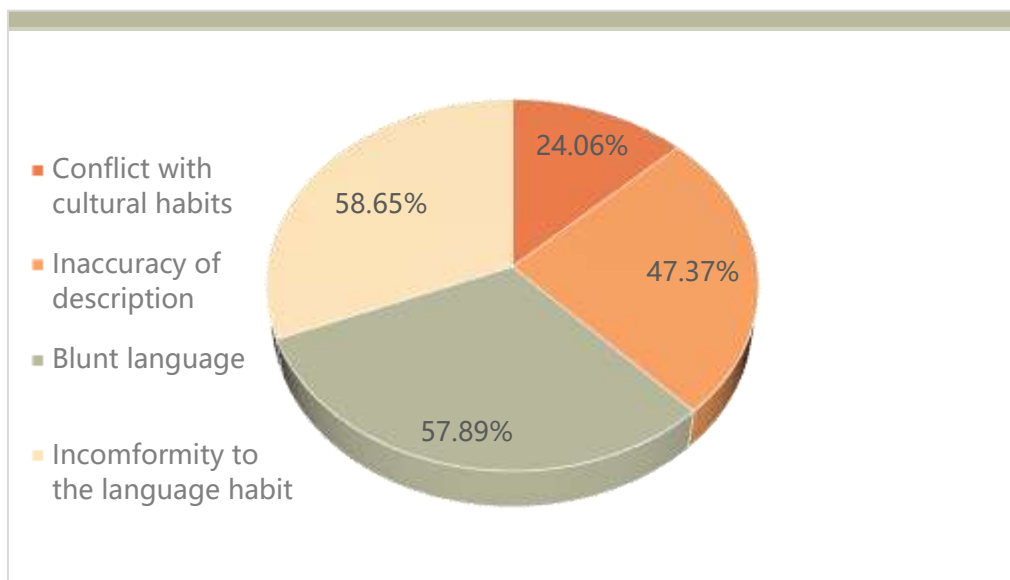

Figure 2. Unsatisfactory parts

The findings presented in Figure 3 reveal that a majority of individuals believe that an effective product introduction ought to encompass a precise and encompassing portrayal of the item. Furthermore, this description must be vivid yet concise, adhering to the linguistic norms and preferences of the intended audience. These outcomes corroborate the hypothesized factors that ought to be incorporated within the corpus, thus validating our initial assumptions. It is evident that a corpus dedicated to the translation of product introductions must encapsulate the inherent features of such introductions, along with the hierarchy of their

significance. Nevertheless, the survey data did not reveal any noteworthy disparities in the areas where users expressed a desire for improvement in the introduction of cross-border e-commerce products. Consequently, this paper will delve deeper into the analysis of user requirements, emphasizing their importance and significance in the subsequent discussions.
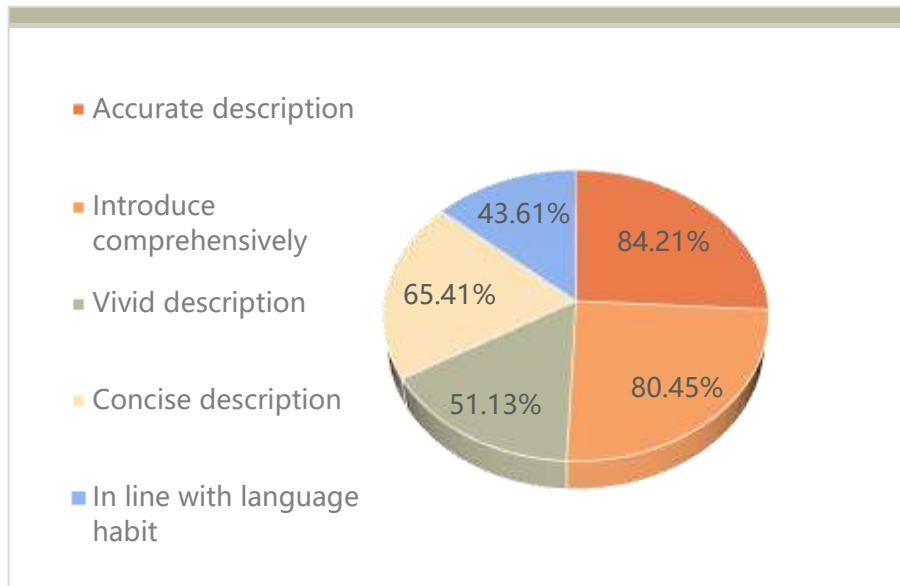

Figure 3. Points for improvement

4.2 SPSS Analysis

After meticulously collecting the questionnaire data, we proceeded to rigorously assess the reliability and validity of the collected information through SPSS analysis. The subsequent correlation analysis, conducted based on the questionnaire response data, serves to authenticate the validity and credibility of our dataset. Notably, the reliability coefficient value stands at 0.644, exceeding the threshold of 0.6, thereby signifying the acceptable reliability quality of the research data. Furthermore, to verify the validity level of the data, we employed factor analysis, a sophisticated data analysis technique, which entails a comprehensive evaluation encompassing various metrics such as the KMO value, commonality, variance interpretation rate, and factor loading coefficients.

Table 1. Validity analysis of collected data

Program	Factor loading							Communality
	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	
Do you use an e-commerce platform?	-0.185	0.072	0.883	0.034	0.035	0.019	0.045	0.825
Will you pay attention to the product description?	0.014	-0.094	0.915	-0.027	0.006	0.008	0.071	0.851
Are you satisfied with the general translation of foreign product descriptions when browsing the product descriptions?	-0.039	-0.067	0.050	0.783	-0.092	-0.026	0.088	0.639
Blunt language	0.042	0.221	0.095	0.514	0.400	-0.171	-0.366	0.648
Not conforming to the language habit	-0.022	0.127	0.093	0.070	-0.062	0.861	-0.105	0.786
Inaccuracy of description	0.024	0.136	0.163	0.020	0.026	-0.151	0.819	0.741
Conflict with cultural habits	0.055	0.062	0.083	-0.055	0.761	-0.030	-0.008	0.598
Accurate description of the product	0.569	-0.122	-0.302	0.125	0.385	0.147	-0.000	0.616
A comprehensive introduction to the product	0.454	-0.002	-0.136	-0.029	0.252	0.485	-0.033	0.525
Vivid description of the product	0.131	0.763	0.039	-0.035	0.024	-0.034	0.232	0.657
Concise description of the product	0.264	0.145	-0.108	0.626	0.041	0.206	-0.022	0.538
Conforms to the language	0.343	0.493	-0.007	0.111	0.073	0.216	0.044	0.427
Closer to everyday language	0.208	0.174	-0.173	0.074	0.502	0.331	0.377	0.612
More in line with the network trend	-0.264	0.744	-0.229	0.145	0.206	0.145	0.017	0.760

Improve description accuracy	0.638	0.111	-0.077	0.255	-0.184	0.053	0.197	0.565
Improve description vividness	0.396	0.630	0.268	-0.026	-0.116	-0.004	-0.340	0.756
More sensitive to cultural differences	0.778	0.171	0.004	-0.046	0.159	-0.052	-0.075	0.670
Eigenvalue(Unrotated)	3.190	2.013	1.381	1.285	1.175	1.125	1.045	-
% of Variance(Unrotated)	18.765%	11.840%	8.126%	7.557%	6.912%	6.619%	6.150%	-
Cumulative of % Variance(Unrotated)	18.765%	30.605%	38.731%	46.289%	53.201%	59.820%	65.969%	-
Eigenvalue(Rotated)	2.059	1.990	1.954	1.404	1.340	1.277	1.191	-
% of Variance(Rotated)	12.112%	11.703%	11.492%	8.256%	7.884%	7.515%	7.007%	-
% of Cumulative Variance(Rotated)	12.112%	23.815%	35.307%	43.563%	51.448%	58.962%	65.969%	-
KMO	0.624							-
Bartlett's Test of Sphericity	330.123							-
df	136							-
P value	0.000							-

Upon examination of the aforementioned table, it becomes evident that the common degree value associated with all research items surpasses the threshold of 0.4. This observation signifies the efficient extraction of information pertaining to the various research items. Furthermore, the KMO value stands at 0.624, exceeding the benchmark of 0.6, thus validating the effectiveness of data extraction. Additionally, the variance explanation rates of the seven factors are distributed as follows: 12.112%, 11.703%, 11.492%, 8.256%, 7.884%, 7.515%, and 7.007%, respectively. Notably, the cumulative variance explanation rate, following rotation, attains a value of 65.969%, which exceeds the 50% threshold. This underscores the efficient extraction of research information, ensuring the reliability and validity of our findings.

Table 2. Reliability analysis of collected data

Name	CITC	Alpha, after deleting the term	Cronbach's Alpha
Not conforming to the language habit	0.191	0.637	
Inaccuracy of description	0.084	0.652	
Conflict with cultural habits	0.188	0.636	
Accurate description of the product	0.252	0.629	
Do you use an e-commerce platform?	0.096	0.646	
Will you pay attention to the product description?	0.016	0.672	
Are you satisfied with the general translation of foreign product descriptions when browsing the product descriptions?	0.101	0.650	
Blunt language	0.261	0.627	
A comprehensive introduction to the product	0.294	0.624	0.644
Vivid description of the product	0.389	0.609	
Concise description of the product	0.331	0.618	
Conforms to the language	0.426	0.604	
Closer to everyday language	0.346	0.617	
More in line with the network trend	0.262	0.627	
Improve description accuracy	0.313	0.621	
Improve description vividness	0.396	0.608	
More sensitive to cultural differences	0.365	0.613	

Cronbach's Alpha：0.654·

Table 3. Correlate Analysis

		Do you use an e-commerce platform?	Are you satisfied with the general translation of foreign product descriptions when browsing the product descriptions?	Will you pay attention to the product description?
Not conforming to the language habit	Correlation coefficient	0.051	0.028	0.001
	p value	0.617	0.785	0.995
	Sample	100	100	100
Inaccuracy of description	Correlation coefficient	0.147	0.003	0.128
	p value	0.145	0.975	0.204
	Sample	100	100	100
Blunt language	Correlation coefficient	0.060	0.171	0.010
	p value	0.552	0.089	0.919
	Sample	100	100	100
More sensitive to cultural differences	Correlation coefficient	-0.093	-0.020	-0.039
	p value	0.355	0.845	0.700
	Sample	100	100	100
Conflict with cultural habits	Correlation coefficient	0.013	-0.040	0.031
	p value	0.900	0.692	0.759
	Sample	100	100	100
Accurate description of the product	Correlation coefficient	-0.285**	0.064	-0.242*
	p value	0.004	0.524	0.015
	Sample	100	100	100
A comprehensive introduction to the product	Correlation coefficient	-0.188	0.017	-0.057
	p value	0.061	0.869	0.574
	Sample	100	100	100
Vivid description of the product	Correlation coefficient	0.057	0.077	0.027
	p value	0.572	0.446	0.787
	Sample	100	100	100
Concise description of the product	Correlation coefficient	-0.061	0.206*	-0.114
	p value	0.545	0.040	0.259
	Sample	100	100	100
Conforms to the language	Correlation coefficient	-0.060	-0.009	-0.042
	p value	0.552	0.930	0.680
	Sample	100	100	100
Closer to everyday language	Correlation coefficient	-0.107	-0.019	-0.127
	p value	0.288	0.851	0.208
	Sample	100	100	100
More in line with the network trend	Correlation coefficient	-0.021	0.039	-0.226*
	p value	0.832	0.702	0.024
	Sample	100	100	100
Improve description accuracy	Correlation coefficient	-0.178	0.093	-0.069
	p value	0.077	0.356	0.497
	Sample	100	100	100
Improve description vividness	Correlation coefficient	0.159	-0.043	0.121
	p value	0.114	0.668	0.232
	Sample	100	100	100

* $p<0.05$ ** $p<0.01$

Drawing upon the findings from the questionnaire survey, this study further integrates the outcomes from prior literature to conduct a comparative analysis aimed at enhancing the effectiveness of data interpretation.

Collectively, the results suggest that the construction of a corpus necessitates a multifaceted approach, encompassing the utilization of terminology that closely resonates with users' daily lives, the enhancement of descriptive accuracy, and the meticulous consideration of cultural nuances. This comprehensive approach ensures the corpus's relevance, precision, and cultural appropriateness, thereby enhancing its overall utility and reliability.

Based on the aforementioned results, all three hypotheses formulated in this study have been scientifically validated. Specifically, it has been established that, in the context of vocabulary usage, the description of goods ought to employ more precise and culturally appropriate terminology. Additionally, with regard to sentence organization, the depiction of goods must be clearer and more explicit. Furthermore, in terms of discourse integration, the description of goods must align with the cultural norms of the target country. These findings align with prior research conducted by Barrera et al. (2016) and Wang (2021), who emphasized the importance of considering cross-cultural differences in translation for cross-border e-commerce.

4.3 Discussion

This study also presents a novel perspective that contrasts with previous research by Zhang & Chen (2023). Notably, it reveals that consumers' demand for translation efficiency is significantly lower than their need for translation accuracy, and they prioritize less vividness in translation. This unexpected finding suggests that there are several underlying reasons. Firstly, the current e-commerce translation system remains inadequate. For consumers, accuracy and conciseness are the fundamental requirements in translation, whereas efficiency and vividness are considered secondary. People's aspiration for advanced content presupposes that the existing translation system has already met their basic needs. Consequently, the results of this study confirm that the current cross-border e-commerce translation system requires further improvement. This study's significance lies in its contribution to identifying these gaps and highlighting the need for enhanced translation systems in cross-border e-commerce.

In the context of translation studies, it is widely recognized that translation accuracy outweighs mere efficiency. Prior research by Im, Park & Choe (2022) hinted at a potential shift in focus within the translation of cross-border e-commerce product introductions, moving away from solely emphasizing vivid product descriptions towards a more balanced consideration of translation quality and efficiency. The suggestion that enhancing translation efficiency alone could constitute a comprehensive research topic appeared to be a decision lacking sufficient rationality, as Nord (1997) had previously emphasized.

This study maintains that if translation efficiency was indeed a desired outcome, it should have been preceded by a robust enhancement of translation quality. This would have entailed not only increasing the precision of the translation but also minimizing misunderstandings that may have arisen due to cultural disparities. In essence, improving translation quality would naturally have led to an increase in translation efficiency. As the quality of the translation improved, inaccuracies and cultural misunderstandings would have decreased, subsequently reducing the time consumers spent comprehending the content.

Based on the preceding analysis, this study ultimately advocates for the establishment of a translation corpus for cross-border e-commerce product introductions, which should embody several key principles. Firstly, it should encompass dictionary entries that are both precise and comprehensive while maintaining conciseness in their expression. Secondly, the corpus should prioritize content that resonates with daily life terminology and accounts for cultural disparities, echoing the sentiments expressed by Xiao & Zhang (2022). Thirdly, it must include alternative expressions that can seamlessly replace those that are either unyielding or unaligned with linguistic norms. Lastly, the corpus should feature adjectives that are both accurate and vivid, enhancing the descriptive power of the product introductions.

5. Conclusion

This study delves into the rationale underlying the selection of content for the construction of a translation corpus specifically catered to cross-border e-commerce product introductions. It addresses significant gaps in extant research in pertinent fields and offers valuable insights to cross-border e-commerce platforms and associated enterprises, guiding them in their translation endeavors of product introductions. Additionally, the findings of this study serve as corpus content support to allied technology enterprises.

However, it is worth noting that due to time constraints, we were unable to gather and analyze the product description content from several prevalent cross-border e-commerce platforms in the market. Consequently, our current study lacks the support of a more extensive database, limiting its scope and depth. Furthermore, the absence of technical support precluded us from designing the corpus itself. Nevertheless, this study offers relevant insights and considerations for future endeavors aimed at developing a comprehensive translation corpus for cross-border e-commerce product introductions.

Future research endeavors can capitalize on this study by amassing additional data from e-commerce platforms and subjecting it to rigorous analysis grounded in the principles of business English translation features as well as the theory of relational

equivalence. Furthermore, this study anticipates future investigations that will utilize the content presented herein to physically devise and establish the corpus, thereby contributing to the advancement of the field.

Conflicts of Interest: The authors declare no conflict of interest.

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