

A Study on the Impact of Language Service Facilitation on Cross-border E-commerce Platforms on Trade Scale

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Abstract: There is a serious problem of language barriers in cross-border e-commerce, so platform-based language services have been introduced as a new way to deal with this problem and extend the scale of trade. The reasons for changes in the amount and form of trade after the introduction of language services are studied in this paper. The three ways to achieve this are to increase the confidence in the scale of opening up for trade, improve the efficiency of information discovery through translation, and promote changes in inquiry responses by staying abreast of developments. Language services can reduce transaction costs by lowering the expenses of information collection and filtering; bilingual communication can improve negotiations and decision-making; good after-sales service will make customers want to buy again. At the level of network externalities, connecting language nodes promotes the joint development of users, and cross-lingual transactions expand the market and improve the iteration of services by diversifying the structure of trade. Research has shown that the provision of language services can promote the creation of values in the platform ecosystem and has all-encompassing and cumulative effects. This paper provides a theoretical explanation for the mechanism of the economic effect of language functions.

Keywords: Cross-border e-commerce platforms, Language service facilitation, Trade scale, Transaction cost, Network externalities, Trade accessibility

Introduction

With the development of cross-border e-commerce, the distance between regions has been reduced; however, language differences are still a serious non-tariff barrier to trade. Platforms have added functions to support multilingual interfaces and real-time translation so that people can communicate in various languages; as a result, language services are gradually becoming an indispensable part of the competitiveness of these platforms. However, the way language service facilitation affects the scale of trade has not been systematically studied in recent years. The three channels of the effect of language service facilitation on the scale of trade are trade accessibility, transaction costs and network externalities. It hopes to discover how language services, in the course of transactions, can attract more users, increase the number of transactions, and improve trade structure. The purpose of this paper is to construct an analytical model of language services and trade scale, enhance the understanding of the function of linguistic elements in the platform economy, and offer a mechanism for platforms to optimise the construction of language functions.

1. The Transformation Mechanism of Language Service Facilitation and Trade Accessibility

1.1 Platform Interface Language Anchoring and the Construction of Consumer Initial Trust

The first cognitive interface consumers are exposed to when viewing foreign products is the choice of the interface language on a cross-border e-commerce platform. The language of the interface for potential buyers will affect how easily they can learn about the goods. Presenting the content in their mother tongue or a language they are familiar with will reduce the mental effort required by the brain and enable consumers to focus more on judging the quality of the product. A good barrier-free linguistic experience will give the public a positive first impression of the platform and make them believe that the platform can provide good services. The main idea of language anchoring is to reduce the sense of geographical distance in cross-border trade by creating an acquaintance system of symbols

and thus build a psychological sense of "accessibility" in consumers' minds, providing a foundation for other transaction activities.

Localisation adaptation of the interface language is not only translation but also the adjustment of cultural metaphors, expression habits and consumer psychology. By reorganising and reconstructing the linguistic system, it is possible to align with the cognitive framework of consumers in the target market; thus, trust can be established early in the process of a transaction. The more familiar the interface language is to the consumers, the safer they will feel using it. Being familiar with the language will lower people's expectations of opportunistic behaviour and help them better understand the rules and guarantees of the platform. The trust-building effect of language anchoring is path-dependent; that is, the positive experience gained in the first contact can become a behaviour anchor and lead to repeated use of the platform and influence later cross-border purchase decisions by consumers^[1].

1.2 Multilingual Translation of Product Information and Search Matching Efficiency

The process of converting product information from the source language to the language of the target market on cross-border e-commerce platforms is, in fact, a cross-cultural reconstruction of product semantics. Multilingual translation is not only the conversion of corresponding vocabulary but also the localisation of product attribute descriptions, functional explanations and use cases. Based on the above mapping of semantics, we can determine whether the product will be recognized effectively by the cognitive schema of the target consumers. When the product information can be shown in different languages for potential buyers, the coverage of the product in the search network will be expanded, and the information silos that previously arose from language barriers will gradually be broken down. Multilingual information is available for products, so more people can find them; thus, the flow of information between suppliers and consumers is more efficient.

The increase in search matching efficiency is due to the addition of keywords and an improvement in semantic relevance through language translation. When users enter keywords in their own language for searching, the multilingual translation system will link and match the search intent with translated product information at a semantic level to solve the problem of literal keyword matching in a single-language system. A search-matching method based on semantics can reduce the number of attempts and errors people need to make in their search for information, and products that suit their needs will be shown higher up in the search results. The improvement in the search-matching efficiency will reduce the time consumers need to find the product after learning about it and thus reduce the duration of their information-seeking effort; at the same time, both the frequency of product exposure and the accuracy of selection will be increased.

1.3 Language Empowerment of Real-time Communication Tools and the Inquiry Conversion Rate

Recently, many cross-border e-commerce platforms have added real-time communication tools with machine translation and bilingual conversation to help buyers and sellers in different countries communicate more easily. Language empowerment can help all sides communicate in their native languages and avoid the problems of distorted information or communication failure that often occur across borders due to language barriers. New information will be added regularly, and people will be informed about changes in product status, shipping and service guarantees in time. Early dissemination of information can help to solve the problem of information asymmetry in cross-border trade. When the public's questions can be answered promptly, they will be less anxious about the purchase and more likely to buy^[2].

As a result of improved communication and stronger relational stickiness provided by language empowerment, there has been a rise in the inquiry conversion rate. Consumers need to get all the relevant information several times and talk to the sellers before purchasing. Language assistance features can help achieve the goal of communication in a short amount of time and avoid delays caused by poor communication. Now there are online platforms that support bilingual communication between buyers and sellers, and through many interactions, a sense of transaction and trust has gradually been established. Linguistically compatible transactions have been relatively stable, and it is hoped that they will be less affected by fluctuations in prices and logistics. A communication system that can be realised through language empowerment will not only help complete a single transaction but also give consumers the expectation of good after-sales service. This expectation will make people want to purchase again and thus increase the total amount of trade on the platform.

2. The Reduction Effect of Language Service Facilitation on Cross-border Transaction Costs

2.1 Dissolution of Information Search and Screening Costs from the Perspective of Linguistics

The language service functions of cross-border e-commerce platforms have reduced the information search path for consumers in cross-border shopping by organising and presenting product information more precisely through semantics. When consumers are shown product pages in a non-native language, a language barrier can cause reduced efficiency in information retrieval; they need to use more mental effort to decipher the semantics of the language and will thus take longer to obtain each piece of information. Multilingual translation services on the platform can convert product attributes, specifications and usage instructions into expressions that are easy for consumers to understand, reduce the time it takes to find this information, and help consumers quickly learn some basic information about a product. A decrease in search costs will allow more consumers to view many more product pages in a short amount of time, and this rich source of information will provide a better basis for later selection and comparison.

The reduction in cost at the information screening stage is shown by the improvement of product quality signals and the filtering of noisy information through language services. The main reason consumers are uncertain about cross-border shopping is that they do not have an intuitive standard for judging how well the actual quality of a product matches its description, and language barriers have further increased this uncertainty. Accurate semantic translation and localisation should be performed on the quality-related information in the product description to present it to consumers in a way that avoids misunderstanding caused by linguistic errors. Consumers do not need to expend mental energy on decoding language during the screening process; instead, they can concentrate on judging the intrinsic qualities of the products and how well they meet their needs. The rise in the efficiency of screening is shown by an increase in the amount of effective information processing that can be achieved per unit of decision-making time.

2.2 Optimisation of Negotiation and Decision-making Costs by Bilingual Communication

Language-assistance functions of real-time communication tools have changed the form of information exchange among parties in cross-border trade, and information loss during the negotiation process has been reduced. In traditional cross-border transaction scenarios, buyers and sellers often cannot discuss the important issues in detail, such as product information, logistics, payment terms, etc., due to language barriers and thus fail to reach a consensus on the transaction terms. Bilingual interaction technology can immediately translate and reconstruct semantics, have both sides confirm the information multiple times in their native languages, and thus ensure the continuity and accuracy of communication. The smooth progress of the negotiation process can reduce the number of information exchanges and shorten the time cycle for reaching an agreement, thus lowering the communication costs per unit of transaction^[3].

To reduce the cost of decision-making, one needs to reduce information uncertainty and clarify transaction expectations by speaking two languages. At the time of cross-border purchase, consumers face many uncertainties about product quality, logistics speed and after-sales service; due to language barriers, these problems are aggravated and lead to a reluctance to buy. Real-time communication via language has given consumers a way to speak directly with sellers, and now they can obtain confirmation on product details, negotiate logistics arrangements, and get explanations of after-sales service policies promptly through immediate responses. This will gradually reveal what the transaction is about. A reduction in decision-making costs can be seen from the shorter time between obtaining information and making a final purchase decision; thus, the delay in decision-making has been reduced, and inquiries can now be converted into actual transactions more quickly.

2.3 Language Support for After-Sales Service and Repeat Purchase Intention

Language services in the after-sales stage will directly affect how well consumers can carry out cross-border shopping and thus affect their overall satisfaction with the platform and future use. Cross-border transactions often have numerous problems in communication and coordination regarding after-sales service, such as returns and exchanges, quality complaints and repair inquiries. Language barriers can lead to problems in the communication of information or difficulty in expression by the company during after-sales service, resulting in consumer dissatisfaction. Language-support services for after-sales communication provided by the platform can help consumers express their problems

more clearly and understand the solutions that will be offered by the platform and sellers better. Therefore, the processing time for after-sales service will be reduced and problems will be solved more completely and promptly.

The fact that they have established a system for repeated purchases shows that the consumers are satisfied with using the service, and good customer service may also be one of the reasons for this satisfaction. At all times during a whole cross-border shopping trip, from finding products and purchasing them online to using customer service, one needs to use many languages. The smoothness of communication in the after-sales stage is often the last impression consumers have of the brand. When consumers are no longer confused by language barriers and can communicate easily with the platform about after-sales service issues, they will have more confidence in and trust the platform. Therefore, in the future, more people will be willing to use the platform for cross-border shopping. Repeated purchase behaviour shows that consumers have a long-term relationship with the service and are willing to use it for an extended period; thus, it is expected that the scale of trade will grow steadily and the number of users will also increase.

3. The Network Externalities of Language Service Facilitation and the Expansion of Trade Scale

3.1 The Connection of Language Nodes and the Synergistic Growth of the Two-Sided Market User Base

Language services have built a network of nodes for multilingual areas on cross-border e-commerce platforms by providing access to communities in different languages, and the construction of this system has promoted the joint development of users on both sides of the platform. Each newly added language service node shows that the platform can now reach a group of users who were previously out of reach due to a language barrier, and the potential consumers in this group have met the basic requirements for cross-border shopping after the problem of language has been solved. At the same time, sellers on the supply side will also benefit from the expansion of language nodes; with the improvement of multilingual service capabilities, they can spread product information to a larger group of consumers, increase sales opportunities, and thus attract more sellers to join the platform. The connection effect of language nodes is bidirectional; that is to say, the development of the consumer side and the supply side are mutually promoting each other to achieve the goal of expanding the user base.

Based on the connection of language nodes, the growth of the two-way user base has entered a virtuous cycle. When the platform adds a new language community via its language service, consumers in that community can start trading with the current sellers on the platform, and as the number of trading instances grows, more consumers of the same language group will be motivated to join. At the same time, a new group of consumers has appeared, and sellers have found a new way to enter a different market; as a result, the number of sellers has increased, and so too has the variety of product categories and countries of origin available. Language nodes are used to spread information and to link different media in the construction of transactional relationships among users. Adding more nodes will result in an exponential increase in the number of transaction combinations, and this network effect will continue to expand the scale of platform users as long as there are improvements in language services^[4].

3.2 Increase in the Density of Cross-lingual Transactions and Improvement in Market Thickness

The rise in the density of cross-lingual transactions due to the facilitation of language services can be shown by an increase in the number of successfully matched transactions among users of different languages per unit of time. Platforms that do not support multiple languages can only be used by people who speak the same language; otherwise, there will be a language barrier and no trade. Add multilingual translation and communication help to the platform, and then many transaction pools that were previously separated by language barriers have started to connect. Consumers can see goods from all over the world in various languages, and sellers' markets have grown from a single-language group to multilingual communities. An increase in transaction pairings will directly lead to an expansion of the transaction network and an increase in the frequency of transactions; that is, the number of transactions per unit of users will also be rising.

An increase in transaction density leads to an expansion of the market thickness of the platform, which is defined as both the total number of matchable transaction opportunities and the frequency of

transaction completion in the market per unit of time. With the spread of cross-border trade, the liquidity of goods on the platform has increased; now, a single product can be displayed to consumers in many different language areas, and their demand will be met by supply resources from all over the world. An increase in the thickness of the market will improve the price discovery mechanism and enhance the efficiency of transaction matching; thus, buyers and sellers in a thicker market will be able to find suitable counter parties more quickly, and both the time cycle and the search effort for matching will decrease. An increase in the thickness of the market will, in turn, raise the platform's ability to keep users; thus, more trading occasions will be created, and buyers and sellers will spend more time on the platform and increase the frequency of trading, forming a virtuous cycle of market thickness and trading activity.

3.3 The Interactive Relationship Between Language Service Iteration and the Diversification of Trade Structure

With the continuous development of technology and functions in language services for cross-border e-commerce, so too has the structure of trade supported by these platforms changed. Starting as a simple word-for-word translation, it has been expanded into a full-featured system that supports semantics, culture, multiple media and interaction; now it can handle many more kinds of products and trade activities. In the beginning, the only language service provided was the translation of standardised product descriptions; now that these services have improved, platforms can also handle personalised products with detailed descriptions, service-oriented products that require detailed communication, and culturally specific items that need to be expressed correctly. With the expansion of the coverage of language services, more types of trade in the platform's transaction system have been added gradually, and as a result, the structure of trade has begun to diversify^[5].

With the diversification of trade, there has been an increase in demand for high-level language services, and consequently, the two have developed together. With the appearance of more and more types of products and trade forms from different cultures on the platform, the demand for adaptation of existing language service functions is growing; thus, to meet the expressive demands of new transaction types, more specific semantic conversion models and communication assistance tools need to be developed. With changes in the structure of trade, this round of language services will continue to be improved and specialised. With continuous improvement in language services, more and more types of trade have been added to the platform, and in turn, the structure of trade and the functions of language services have been strengthened together. Finally, the interaction between the diversification of the trade structure and the iteration of language services can be observed in the platform's ability to handle an increasing scale of total trade volume, and at the same time, its internal structure has become more hierarchical and diverse.

Conclusion

The impact of language service facilitation on the scale of cross-border e-commerce platforms in trade has a transmission path that extends from the front end to the back end, and it is the cumulative effect of many times. Language services at the front end of transactions can enhance the trustworthiness of communication and improve the efficiency of search-and-inquiry conversion to make trade more convenient. Language services can reduce the costs of information search, negotiation and decision-making at the intermediate stage of transactions and enhance the efficiency and comprehensiveness of the consumer experience in after-sales service. Network externalities also occur at the back end of transactions: connecting language nodes promotes the synergistic growth of the two-sided user base, increases cross-lingual transaction density, thereby forming a thicker market, and service iteration is done in conjunction with diversification of the trade structure. The three paths are interrelated, and thus the effect of language services is both cumulative and varied. Future research will introduce new language functions, such as voice recognition and multi-modal interaction; explore the various effects of language services on different types of products and trade models; focus on the co-evolution of language technology and platform business models, etc.

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