

Demand Analysis of English Language Service Value Based on Data Mining Ecosystem

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Abstract

INTRODUCTION: Language is a bridge between people, an indispensable component of information exchange and communication, and an essential part of social culture. As the most widely used language in the world, English occupies an essential position in the social language, generating value demands related to it, ranging from the needs of individuals for their development to the needs of social industries or fields for their development to the national language strategy.

OBJECTIVES: The purpose of this paper is that due to the implementation of the "One Belt, One Road" policy, more and more cultures of the countries along the route are coming into China's vision, and at the same time, Chinese culture should also be promoted, and only through the correct use of language can we promote the Chinese civilization and other civilizations to seek common ground and put aside their differences, appreciate each other, and eliminate the clash of cultures in the process of mutual collision and fusion of different civilizations.

METHODS: Based on the data mining ecosystem, this study examines the demand analysis of the value of English language services in today's environment, explores the explicit and implicit benefits regarding the value of English language services, and analyzes and explores the explicit and implicit economic benefits of language services and the economic, social, and cultural benefits they encompass at different levels.

RESULTS: The research suggests that we need to focus on the value of multiform English language services, strengthen English language industry research and studies, and conduct a scientific English language economic program.

CONCLUSION: Language services and language economy are two closely related concepts. Analyzing language services from multiple perspectives can reveal their explicit and implicit economic, social and cultural benefits.

Keywords: language service value, explicit interest, implicit benefit, data mining systems

Received on 2 May 2023, accepted on 28 August 2023, published on 6 September 2023

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doi: 10.4108/eetsis.3905

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1 Introduction

Due to the rapid development of "One Belt, One Road", the economic and trade development of China and countries along the "One Belt, One Road" is characterized by hierarchical and extensive development[1]. There is a positive correlation between the degree of cultural exchange and the frequency of economic exchanges, which also bring about cultural conflicts. The neighboring countries along the Belt and Road have a long history, including profound traditional customs and colorful

cultures. Cultural differences may lead to a deviation in information understanding between the two sides and even hinder the further development of international economic and trade activities. This situation will bring economic losses and incalculable political consequences[2]. Therefore, the essence of the Belt and Road Initiative is a combination of economic, political, and cultural levels. This can be achieved only by the correct use of language, different civilizations in the process of collision and fusion with each other, promoting the Chinese civilization and other civilizations seeking common ground while putting aside differences, mutual

appreciation, eliminating cultural conflict, international economic and trade activities, creating a good environment, realizing high-speed economic development, and providing a solid base for political security. The unique strategic benefits of language are manifested by promoting the integration of different civilizations and resolving cultural conflicts.

The definition of language service is that, as a subject of behavior, it provides a helping hand to others and society through words, showing humanism and communication characteristics [3]. Content or form is expressed through its words, indicating that it has the characteristics of knowledge and tools. The content of "actor" covers a wide range, including national government, groups, and individuals, indicating that it has social and economic characteristics[4].

As a widely used language, English is a cornerstone of communication. It is widely used in international conferences, academic forums, seminars, international business conversations, and text contracts. It also plays a significant role in the work of multinational and foreign companies. Like other public subjects, English needs to be combined with professional skills to meet the needs of society for interdisciplinary talents. Language is also the carrier of national politics, economy, and culture. Some scholars have proposed dividing language services into three categories: economic, political, and cultural [5]. Cultural service is to serve the other two. In the era of rapid development of big data technology, it is increasingly possible to apply the technology related to big data to all aspects of society. The relevant fields are based on big data and efficient operation modes, and their related operations are also high-precision to achieve the high efficiency of the operation of the relevant units and reduce a large part of operating expenses. At the same time, data mining technology has been widely used in different fields and industries and has achieved good results. Therefore, based on data mining technology, this paper explores the demand analysis of English-language service value.

2 Research Background

We can only analyze the value of language services by understanding the value of language resources [6]. In terms of its value, the academic community has recently carried out relevant discussions, including those on political benefits, economic benefits, cultural benefits, scientific and technological benefits, and social benefits[7]. As for its explicit and implicit benefits, some scholars believe that the value of language essence refers to its implicit benefits, namely its importance, standardization, language history, civilization, information, recorded text data, etc. The specific expression of its application value is also a focus of scholars' attention, generally divided into language and social function[8], such as the number of uses, scope, and related benefits. Some scholars believe that "language

resources have implicit and explicit benefits. When instrumental, it shows its explicit benefits, including economic and cultural benefits, vocabulary, rules, and other factors[9]. We mentioned that we should first understand the value of language resources before analyzing the value of language services, which does not mean that the two can be equated[10]. It is a specific service behavior that realizes its value and benefit at the social level; that is, it brings positive aspects to the industry or field regarding social and economic development[11].

Foreign researchers are based on the premise of demand analysis and, from the theoretical research and practical application of two different aspects of the study, get a relatively complete research conclusion. In terms of theoretical research, its content is to create a suitable demand analysis mode, mainly including the following: target situation analysis[12], present situation analysis[13], and other demand analysis models[14]. Some scholars start from the perspective of practical application, starting with the demand for foreign languages among the newly hired government department staff and the application in practical work. Other researchers examined the foreign language needs of the military, assessing the level of English listening, speaking, comprehension, and writing requirements. Some scholars have studied the needs of business companies, and the survey results show that English talents are the most in-demand by business companies. From the company's perspective, this paper analyzes the abilities they value the most. From the staff's perspective, it analyzes the abilities they want to improve the most. Some researchers start with the needs of college English to complete its needs analysis; the research content is its use scenario, the ability required to complete a task, and the comprehensive characteristics of the task[15].

Domestic scholars have detailedly analyzed social needs from the perspective of theoretical research[16]. The first step is to build the model and subdivide the requirements level by level. For example, some scholars subdivide social needs into general and specific ones at the next level, where specific social needs can represent the needs of industries or fields. From the practical application perspective, quantitative surveys are conducted on the needs of English professionals by companies and institutions through interviews or questionnaires. Industry requirements, as a general expression of specific requirements, are contained in the results[17]. Therefore, in the era of data background, it is of great significance to study the demand analysis of English language service value. This is shown in Figure 1.

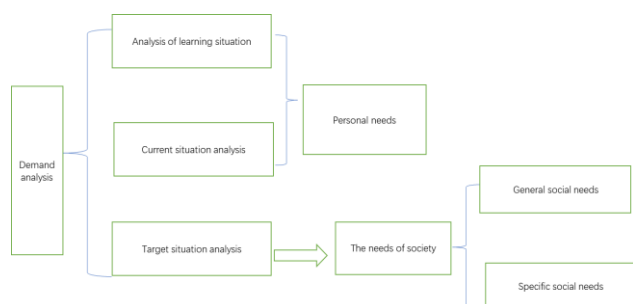


Figure 1. Requirement Analysis Model

3. Materials and Methods

With the rapid development of information technology, a large amount of data is stored in our daily work and various fields. Based on this data, people can take relevant actions artificially or intelligently and detect patterns. Further investigation and judgment on these data can provide a valuable basis for the following decisions of relevant departments. This helps to achieve high work efficiency[18].

In the era of big data on the Internet, data mining technology is an interdisciplinary field that integrates technologies from many fields, including but not limited to AI technology, data statistics, database technology, and so on. There is yet to be a unified definition of data mining. Still, there is consensus that it is the use of relevant technology on a lot of incomplete information, a large number of chaotic, irregular data, to discover the contents contained in the unknown. Data mining includes three stages: preparation, mining, and expression of results[19].

Data preparation phase. It consists of the following three steps: The first is data selection. Part of the analysis information is mined from the program's database, implementing the related task and the original and existing data as the basis for later processing. Second is data preprocessing, which analyses and processes the selected information to ensure it meets users' requirements. In this part, relevant personnel count the missing data values, standardize the data format, analyze and determine the relevant data, delete some redundant data, and finally collect all valuable data. The last link is data transformation, whose main task is to simplify the data obtained in the previous link. Based on data stratification technology, data conversion and standardization are carried out after data is stratified so that relevant personnel can use the data according to their needs[20].

Data mining phase: The user is purpose-oriented and chooses the appropriate method. The choice of method depends on the final requirements as well as the characteristics of the information. The method used is indispensable to achieving the ultimate purpose. Through the appropriate methods of mining and analysis of information, the user can mine a vast amount of

information that is disordered without regular information isolation and the ultimate purpose of the related content. This part is the top priority in the whole process.

Result expression stage This is the last step of the whole process. Some repetitive or irrelevant data may remain after the above data selection and extraction stages. Therefore, the user has to judge which information extracted is valid and which is invalid and discard the invalid information. Suppose the final results do not meet the user's expected theoretical results or relevant requirements. In that case, they must return to the initial steps, re-extract appropriate information, and use a new method. If the results still do not meet expectations, repeat the above steps until the user's expectations are met. This is shown in Figure 2.

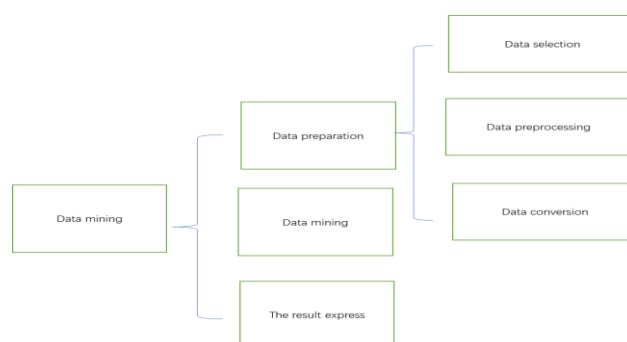


Figure 2. Data mining technology

4. Results and discussion

4.1 Explicit economic benefits of English services

The explicit benefits of language services are very marketable. This kind of language service operates according to the operation mode and law of the market, and there is a demand for both the supply of specific language products and the consumption of language. For example, in the language training services market, both large and small language training institutions at home and abroad need to take a share of the pie based on market supply and demand. Some leading companies, such as New Oriental, have enjoyed strong financial returns in this area due to their superior strength. Since 2016, the scale of the English market has been increasing year by year, as shown in Figure 3.

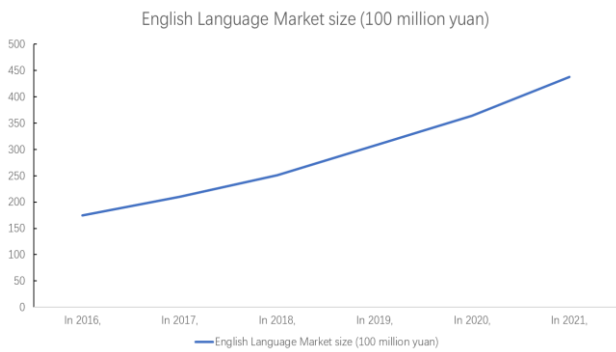


Figure 3. English language market size

Attention is positively correlated with the degree of marketization. Language services with a high degree of marketization and apparent interest are attracting strong interest from service providers and consumers. Families and individuals involved in language training institutions of different sizes, especially English training institutions, are very concerned about this, so English services have clear consumption awareness and motivation. People are generally willing to pay money for English language learning, and nearly 50% are willing to pay more than 2000 yuan. Among them, the proportion of those willing to invest 20013000, 3005000, and 50010,000 in English learning is higher than 10%.

In contrast, in some industries or fields, people are not interested in language services, although in some cases, they enjoy such treatment. Like the language service behavior in catering or medical services, people also need a more precise awareness of language consumption. In contrast, people are more interested in critical services (e.g., catering, medical service behavior). This is shown in Figure 4.

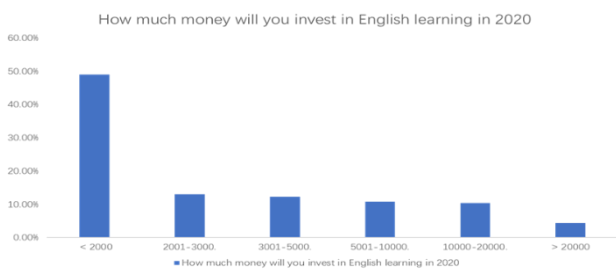


Figure 4. How much money are people willing to invest in English learning in 2020?

4.2 Implied Benefit Analysis

Implicit benefits of language service include industry language service and related language service behavior. The relative explicit benefits are first analyzed at the theoretical level because the implied benefits do not have advanced marketization, extensive benefits, or quantifiable benefits but objectively exist and have particular importance. This paper briefly analyzes the implied economic benefits and implied non-economic

benefits, such as social benefits, cultural benefits, and strategic benefits, mentioned above.

4.2.1 Economic benefits of English in industry language services

Compared with explicit benefits, the economic benefits of English-language services are not only hidden but also difficult to quantify. Therefore, the research uses the concept of payment motivation in economics to investigate the language consumption motivation of consumers. The motivation to purchase English-language services refers to the amount that English-speaking consumers can pay for English-language services. Since the high potential benefit of English consumption is reflected in the high consumption motivation, the consumer's English consumption motivation reflects the economic benefit of English service to a certain extent. People tend to go to places that charge more for better language services. People's motivations for language consumption also depend on age, financial distress and interest in the service. The lower the income, the more likely they are to choose a lower price for language services, and the higher the income, the more likely they are to pay a relatively higher price. Young people are more willing to pay money for this service than older people, and their consumption willingness is relatively high. This is shown in Figure 5.

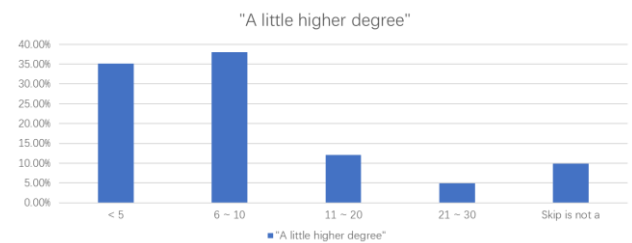


Figure 5. The degree to which people are willing to choose a slightly higher option price

From the perspective of service providers, in some service industries, the common phenomenon is that service personnel and service units do not pay much attention to English-language services or attach little importance to English-language services. For example, they only care a little about other service forms, such as written language. Although some companies will include language proficiency in their recruitment assessment, they rarely consider other forms, such as the need for more emphasis on evaluating employees' behavior or ability improvement during work. It also reflects a general lack of attention to implicit benefits. This is shown in Figure 6.

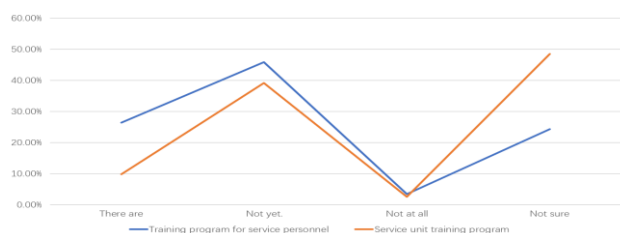


Figure 6. Training plan for service units and service personnel

4.2.2 Implicit non-economic Benefits of English Language Services

Language service's implied non-economic benefits include cultural, social, and strategic benefits. The quantifiable and marketability degree of the above invisible non-economic benefits are low compared with economic benefits.

4.2.2.1 Cultural benefits

Language and other elements constitute culture, which bears the burden of carrying on civilization. It has crucial cultural benefits. In the visual aspect of the service industry or field, its cultural benefits are mainly reflected in the inheritance of civilization and cultural innovation, etc., and it is also the top priority of cultural consumption and cultural industry. The differences between English and Chinese are mainly reflected in sentence structure and grammar, composed of different cultural elements. English not only enriches the connotation of Chinese culture but also promotes the development of Chinese culture abroad. With the advent of the English era, some foreign cultures have quietly poured into China and become popular there. With the arrival of the English-speaking world, some foreign cultures have quietly infiltrated China and become popular there. For example, Western Christmas and Valentine's Day are very popular among young people in China. Therefore, it enriches the diversity of Chinese culture. China's excellent culture is also spread to other countries by China's foreign cultural exchanges, promoting the world's understanding of China, including the famous Confucius culture and so on, which further promotes great cultural integration. English is widely spread in China, which enriches the linguistic content of Chinese. For example, in the translation of modern, mode, society, and other words, direct transliteration, literal translation, or compound translation. In today's era, the rapid development of the Internet has swept people's lives, and some network companies have flocked to the Chinese market. For example, online (online), email (email), and so on enrich the Chinese vocabulary. In addition, China shows a relatively apparent phenomenon, namely, Chinese Westernization and Chinglish's emergence. This is undoubtedly a significant influence on Chinese culture.

For a long time, English education in China has tended to take advanced Western technology and knowledge as the standard to teach. The cultural wave from the West has had a significant impact on Eastern civilization. Therefore, the new era requires new requirements for English teaching: not only to let Western civilization continue to come in but also to let Eastern civilization go out and carry forward Chinese culture. Such cultural waves flow towards each other which are promoting the collision and integration of the Eastern and Western cultural waves and inheriting, developing, and sharing the excellent cultural thinking, concepts, achievements, and core values of Chinese civilization. More specifically, expanding our discourse power in the international political arena also expresses the promotion of cultural soft power and confidence. Chinese civilization has a long history. English language services can also use English as the medium of understanding and critical learning and as the fruits of human science culture to expand the culture of other countries, critically absorb other cultural elements of civilization, pay attention to the audit and cultural comparison, expand horizons, and improve the understanding of international exchanges and dialogue.

The value of English language services is expressed through various language services, including but not limited to written and spoken language. Therefore, we should objectively analyze its economic contribution, jump out of the professional language service industry, and grasp the overall picture of its economy. Although sectors such as translation and education are relatively mature and their economic behavior is easier to observe, they are only part of the economic industry. As for its services, its core competitiveness is highly marketable, but there still needs to be more analysis of the advantages and values of its services. Its relevant functions and cultural value orientation can be obtained from its service information. Therefore, we should pay attention to the service value of this industry, and reform and innovation can be made on the original basis.

Studies on the economic contribution of language mainly focus on the explicit economic benefits of English language services or language industries. Besides the obvious economic benefits of English-language services, It also has many critical hidden benefits, essential in promoting social harmony and stability and indirectly driving economic development. Therefore, it is necessary to fully understand the value composition of English services, abandon the "only look at the market and only look at the money approach, and focus on the non-market value behind the explicit market value. This applies to professional language services as well as industry language services. To analyze the value of English services, combining the economic attributes and social benefits of English resources is necessary. We should focus on tools, economic aspects, and English cultural nature and identity. The economic attributes of the English language resources should be combined with social benefits to have a more comprehensive

understanding of the value of language services and industry benefits.

4.2.2.2 Social benefits

In recent years, some scholars have begun to pay attention to how to protect the language rights of social groups. The primary task is to increase the country's language ability and build a harmonious and friendly language environment. This raises a new question: What role do language services play in this process?

The first is the issue of language services in healthcare. Researchers who tracked the health of 30,000 newly arrived immigrants found that after four years, the proportion of men with poor English rose from 6% to 13%, while the proportion of women with poor English rose from 9% to 22%. Those who are fluent in English are not. Because the patient's English could be better, it is difficult for the attending doctor to communicate well so that the doctor will confirm repeatedly before treatment, and a large amount of examination cost is not small for the patient. Even patients with difficulty communicating are only taken to emergency services once they are more ill, thus missing out on optimal treatment opportunities. Many foreign hospitals and clinics use intermediary telephone translation services to solve the communication barriers mentioned in the appeal. In China, doctor-patient disputes often occur for various reasons, which may even have indelible consequences. According to the survey, most contradictions and conflicts are caused by poor communication, leading to misunderstandings between the two sides. From the perspective of language services, medical staff provide medical services and dependent language services. This is shown in Figure 7.

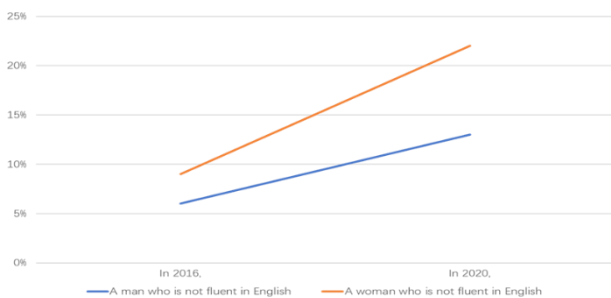


Figure 7. Change in the number of men and women reporting poor health after four years of living in Canada Based on social needs at the social level, compound talents are becoming increasingly popular with the public. Economic globalization makes the progress of science and technology also have a trend of integration. The development of a single discipline makes it difficult to promote the progress of science and technology, and only the integration of multidisciplinary fields can promote the progress of science and technology. The rise of every new and advanced technology is integrated across disciplines. Compound talents, as the name implies, should not only know more but also know deeply; they must not only be able to subdivide domain knowledge but also synthesize

discipline technology. Compound English talents, based on this, have a deep knowledge of the English language but also grasp solid interdisciplinary knowledge. From the aspect that enterprises focus on English talents, it can be seen that enterprises pay more attention to the practical operation ability of talents, that is, the ability to comprehensively apply knowledge to practice, as shown in Figure 8.

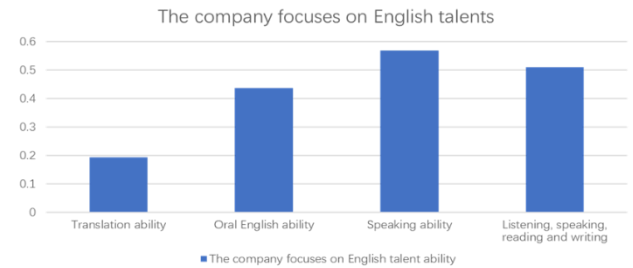


Figure 8. The company focuses on English ability when recruiting employees.

In macro terms, the national condition of our country has been poor for a long time and needs to be focused on improving our people's language ability.

In recent years, researchers in linguistics and economics have paid much attention to the study and development of the English language industry. Relevant scholars have explored the industry's essence, expansion, composition, and development status, as well as the development strategies of the industry at home and abroad. It is generally from the macro perspective of qualitative analysis, analysis, and processing of some primary industrial data to research these data to obtain a non-concrete theoretical achievement.

The economic contribution rate of the industry should be achieved through timely and accurate grasping of the development trend and prospects of the industry and targeted research and investigation. The survey contents include collecting microdata of individuals or groups in the industry, collecting macrodata of the industry, and, according to the type of enterprise, investigating the production factors of the industry, the company's market share, the mode of production and operation, costs and profits, etc. In the process, due to the particularity of its products and services as a whole, it tends to focus on the demand of the market to follow the tendency of consumers' willingness to demand in time, to understand consumer consumption psychology, externalized expression and implied demand, the scientific measure of its industry, and the economic contribution, and to justify its demand analysis to the trend.

4.2.2.3 Strategic Benefits

In recent years, China has undertaken the important task of building a community with a shared future for humanity through the "One Belt, One Road" Initiative. The study and demand analysis of English language service value must have the value orientation of language

strategy, conform to the national conditions of China, and conform to the pace of national strategy to promote, safeguard, and expand national interests.

(1) Political interests

Today, English is of irreplaceable importance on the world political stage. According to the survival and long-term development of the country, China is trying to improve the English level of its nationals, promoting international exchanges in politics and economy, and giving a lot of energy, which plays a role that must be addressed in international affairs. Therefore, English can not only expand the scope of national knowledge and enrich the connotation of national culture but more importantly, it is also related to political factors. We should excavate its deep cultural thinking. In addition to being the carrier of culture, it also contains Western political ideology and value systems. These cultural thoughts will subtly influence and change people's logic and underlying logic. It will have a certain degree of influence on China's ideological education and even affect national interests. For example, language teaching will affect students' psychological set and value orientation. Therefore, rather than unquestioningly accepting the content of English textbooks, it is better to study and judge each country's political system, historical evolution, national conditions, and people's lives. At the national level, English teaching significantly improves discourse power and discourse construction ability. International discourse power is a soft power expression of a country's power and status in the international community, which can directly or indirectly affect a country's politics, economy, military, media, and other aspects. From the perspective of social needs, more and more interdisciplinary talents are needed to participate in the social work industry, which puts forward higher requirements for the comprehensive quality of talent. Translation companies consider the ability to translate text the most crucial ability for employees, followed by bilingualism, the ability to understand cultural differences, and the ability to identify stylistic categories. This is shown in Figure 9.

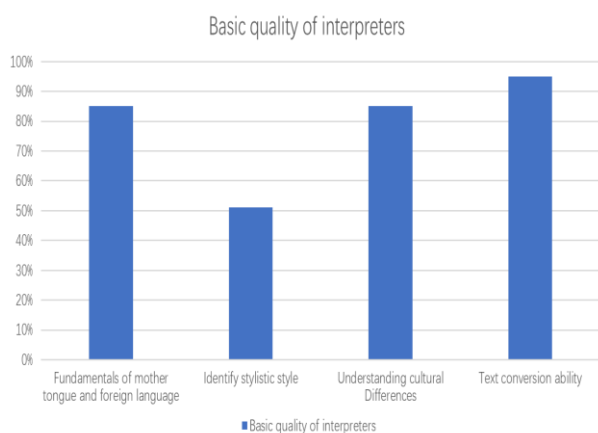


Figure 9. The essential qualities that business English interpreters should have

(2) Security interests

In the new era and with new requirements, the essential meaning of national security and its extension are more prosperous than before, the essential connotation of the space and time domain is broader than before, and the influencing factors at home and abroad are more complex than in the past. A country must first ensure national security if it wants peace, stability, survival, and progress. The importance of language security must be addressed to ensure national security. Its meaning includes the following two aspects: one is to provide the use value needed for the country's stable development; second, the value of text security. Because its condition and use will involve national and social security problems, it is necessary to use it correctly to ensure national and social security. One of the non-negligible contents of the service value of the English language is the security of the language because the deviation of the use of English itself and the cognition of the current situation may have a particular impact on national security, political stability, and social development. The importance of English in international affairs is well known. In understanding and mastering English simultaneously, one should not unquestioningly and selectively absorb the implicit cultural thinking and logic concepts, realize that English is no substitute for the national language, weaken the tension of their native language, and not squeeze their native language learning and use. English education in China implies a dangerous trend of "self-colonization". This trend will impact national security and influence students' values.

Education has long been tied to political and national security in today's unpredictable international environment. It should connect with national strategies and social needs, guide young students to form correct values and avoid indelible results caused by the corrosion of foreign culture. Based on the severe consequences caused by the 9/11 incident, to maintain national security, the United States issued the "National Security Language Program" policy, which encourages American citizens to learn the eight "strategic languages" that the United States needs, including Chinese. Under the National Security Language Program, the United States has implemented several programs across various government agencies. The introduction of this policy illustrates the strategic position of language, which we should also pay attention to. It is difficult to measure its strategic value from the perspective of efficiency and marketization, especially in the unpredictable international situation. We must recognize the strategic value of English-language services and the social and national needs they bring.

(3) Economic benefits

In the context of economic globalization, language communication and the resource value of communication become more and more critical. As far as language resources are concerned, their core value is to serve national development. We should comply with the call of the country and society, enhance international competitiveness, contribute to national economic interests, and realize the need for self-development in this

process. Therefore, the focus should be on fully exploiting, integrating, and exploring language resources through their value. Language strategy is also an effective way to improve human resources by learning English to develop language resources and turn them into resources for national and social development.

Language as human capital and economists' research on the role of language ability in the labor income gap theoretically reveal the language's economic function and economic benefits. For a long time, from the point of view of demand analysis, the value of English services always exceeded domestic demand. In terms of connecting it with social needs and national development, the current domestic situation requires more effort than just meeting the needs of individuals for college and job hunting. For example, teaching English as a subject can achieve long-term development and be valued by the country only if it contributes to the country. English education is a primary subject field. Therefore, the research results in education are not only the external expression of the development of this field but also the internal expression of the development direction of enterprises and even countries related to this field. The value of English service should not only conform to the national conditions, that is, in addition to the needs of the education field itself, but also pay attention to and strengthen the dialogue and communication with the country and society in this field, exchange what is needed, and improve the economic benefits of its courses. Input costs can create talent to meet the country's and society's urgent needs. The steady supply of high-quality human capital is one of the lifeblood of economic development. Then, in terms of human resource development objectives, it is necessary to transform it from generic to compound. Training and safeguarding "English + expert" or "expert + English" compound talents is the "guiding" demand for "output-English compound talents". The more talented people a country has, the more vibrant and creative its economy will be. Similarly, these training objectives are also an advantage for individuals, helping them to improve their core competitiveness as human resources, win a seat in the increasingly competitive market, and achieve the economic goals of personal value and self-demand value.

The demand for English-language services is analyzed through the extensive data mining ecosystem. As for developing its economy and industry, its service subject is the government and related social fields to realize the English-language economic plan. Its meaning derives from the program's evaluation, selection, composition, and management and is related to its economic behavior and the language program of its industry. Its economic plan embodies its functional plan, and the concept of English resources is further implemented in the language plan. At the same time, English economic planning is an independent socio-economic phenomenon, especially in its economy and the management of industries or fields. Therefore, compared with traditional English language plans (such as the English Language Ontology Plan and

Status Plan), this plan has a higher correlation coefficient with social needs at the national level, and it belongs to the domains of individual, group, and national language strategy.

We should focus on analyzing the value of language services and their use. We should treat it from a static and one-sided perspective and pay attention to it dynamically and comprehensively. Analyzing its explicit and implicit benefits allows us better to understand its role and value in related fields.

5 conclusion

Language service and language economy are two closely related concepts. We can get explicit and implicit economic, social, and cultural benefits by analyzing language services from multiple perspectives. They focus on the contribution of language economy, which represents an analysis from another perspective. We should pay more attention to the service value of English in various forms, strengthen the investigation and research of the English language industry, and carry out scientific economic planning for English. It requires an effective language strategy to make its economy and industry sustainable and green from a national perspective. Firstly, it is necessary to investigate the development status and prospects of the industry. Secondly, it is necessary to analyze the factors that affect the development of the industry or field. It is necessary to treat this issue from the perspectives of linguistics and economics. From the perspective of social consciousness, how can we alert Chinese citizens to the economic power of English and the ability to live in English? These are important issues related to the contribution of English language development and essential issues to be considered when studying the law of English language development.

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