E-C Translation Strategies and Practice of Language Features of Agricultural Machinery Operation Manual

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Abstract. The agricultural machinery operation manual is a type of technological text, and as a guiding technical document, its clarity and accuracy are crucial for the correct use and maintenance of agricultural machinery. This study conducts an in-depth analysis of the specialized terminology and expressions within the manual to deconstruct its linguistic characteristics, ensuring the effectiveness of information transmission. By integrating the theory of functional equivalence translation, this paper constructs a strategic framework suitable for the translation of agricultural machinery manuals, aiming to enhance translation quality and ensure the accuracy and functionality of technical documents in different linguistic environments. Through comparative analysis of practical cases, this study validates the practical application of the proposed strategies, confirming their feasibility and effectiveness in the translation practice of agricultural machinery manuals. Overall, this research provides theoretical guidance and operational models for the translation of agricultural machinery manuals, holding significant implications for advancing translation practices in related fields.

Keywords: Agricultural Machinery Operation Manual, Terminology Analysis, Translation Strategies, Case Analysis, Technical Document Translation

1 Introduction

With the accelerated development of globalization, especially in the core technologies such as automated agricultural machinery, high-precision sensors and agricultural robots, China is still dependent on imports. International cooperation and exchanges in the field of science and technology are increasingly frequent, among which the translation of scientific and technological texts plays a vital role as a bridge. Many agricultural machinery manuals or academic papers are still in the process of translating from English to Chinese. With the rapid development of agricultural science and technology, the demand for related scientific and technological text translation is also increasing. However, due to the particularity of agricultural machinery operation manual, such as many professional terms, strong operability, and fast term update, there are many challenges in the translation process. “It should take the employment

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as the orientation and combine the training of translation talents with the market demand. [1]"

This paper deeply discusses the theory and practice of agricultural machinery operation manual, analyzes the difficulties and strategies in the translation process, and provides reference for improving the quality of translation and promoting the international exchange and cooperation of agricultural science and technology. The accurate communication of professional terms within the text must be fully considered when constructing the translation strategy. Precise translation of verbs with multiple meanings such as "operate", "app", "run", etc. Through comparative analysis, a cross-language network of experts will be established to ensure timely communication with agricultural machinery related users and collect feedback information. In addition, the translation of data and parameters should also pay great attention to it during the translation of the operation manual. For example, the technical parameters such as rotation speed, power, torque, etc., must ensure the accuracy of the numbers and the consistency of the units to prevent the operational risks caused by information errors. The international common unit of measurement standard (such as the international system of units SI), not only meet the professional requirements, but also easier to Chinese users to understand and accept.

2 Language Analysis of Agricultural Machinery 0peration Manual

The language characteristics of the agricultural machinery operation manual are mainly reflected in the accuracy, professionalism and concise operation. As for the language characteristics and translation challenges of the agricultural machinery operation manual, Liu Liya[2] (2021) analyzed the language characteristics of the operation manual in her research, such as the behavior subject is not clear, the action instruction is not clear and the information focus is not prominent, these characteristics affect the readability and practicability of the operation manual. Xue Yanliang (2020) mentioned that " appropriate translation methods should be adopted to ensure the accurate transmission of information. Research on agricultural English characteristics and translation strategies"[3]. To this end, the author proposed corresponding translation strategies, such as improving the clarity and accuracy of the operation manual by changing the voice, adding clear behavior subjects and adjusting the sentence patterns. “Due to the continuous development of agricultural disciplines and the deepening of international exchanges and cooperation, the intersection between disciplines is more and more. In addition to the continuous emergence of new ideas, new ideas, new means and new ideas, the translation strategy should also keep pace with The Times.”[4] In addition, the research of Liu Yanan[5] (2022) also emphasized the purpose of the translation of operation manuals, that is, to ensure the transmission of information and the guidance of operation, especially when dealing with professional terms, compound sentences and passive sentences, the need to use appropriate translation methods to ensure the accurate transmission of information. These studies pro-

vide important perspectives and methods for understanding and addressing the linguistic features of farm O manuals.

In terms of the use of professional terms, the manual of common agricultural machinery professional terms such as "sprayer", "lawn machine", "harvester", etc., to ensure the accuracy of the use, reduce the "system", "module" and other fuzzy expressions caused by English-Chinese literal translation. Wei Mengfen[6] (2014:5-7) found in studying scientific and technological texts that a large number of terms in scientific English were derived from the transformation of non-scientific terms, including the specialization of common words and the diversified specialization of the meaning of the same word. Normation of professional terms is essential to reduce operational bias and improve operational efficiency.

In the sentence structure, the manual often uses the active voice, emphasizing the subject and behavior of the operation, such as "starting the engine" and "adjusting the blade height". The selection of verbs is specific to improve the operability, such as using "lock", "calibration", "detection" and other verbs, to ensure that the user understands the operation requirements. Related to this, the contents of the manual are mostly short sentences and point statements, which are convenient for quick access and implementation. For complex operations, the operation process is often refined through enumeration and serialization steps, such as "Firstly check the oil level, then start the power supply, Finally adjust the working parameters". For the expression of data and parameters, rigorous quantification is an important feature of the manual. Common specifications such as "Engine speed should be set at 2200 rpm", "working width of 1.5 meters", "fuel tank capacity should not be less than 50 liters", these specific values provide clear standards for operation. At the same time, when describing the parameters, often combined with recommendations, such as "the optimal working temperature is 25-30 degrees Celsius", to improve the stability and efficiency of the equipment.

Graphs and tables also play an important role in the manual. Through the understanding of visual auxiliary content, the illustrations usually include the annotation of equipment components, operation flow chart, etc., so that users can intuitively obtain information and reduce understanding obstacles. The table is used to summarize the inspection items and solutions of common faults for quick comparison and reference.

In addition, farm machinery operating manuals usually contain safe operation tips. Use warning statements such as "Wear safety guards" and "DO NOT debug the equipment during operation" to emphasize the safety and standardization of the operation to avoid accidents. This information is usually highlighted in bold or colored font to attract the user's attention.

The effectiveness of the language function is also a link that can not be ignored in the agricultural machinery operation manual. Clear and concise language can not only improve the operation efficiency of users, but also reduce the cost of training and improve the speed of beginners. Therefore, the preparation of agricultural machinery operation manual requires concise language, clear instructions, avoid excessive accumulation of professional terms as far as possible, and at the same time, provide necessary explanations for specific terms, so that users of different levels can understand and execute.

However, Chinese has its language characteristics different from English, including the four-character language structure for example: operating steps, plant parameter, maintenance tips etc. And they can be listed in a standardized format to improve the overall document consistency and readability. This method not only facilitates the practical operation of users, and also helps to the efficient transmission of information, especially when multiple devices share the platform.

The agricultural machinery operation manual must be user-centered in the language use. By analyzing the background and needs of the target users, the language style and expression mode are adjusted to ensure the accuracy and effectiveness of information transmission. At the same time, the use of professional terms and easy to understand language, not only to meet the professional requirements, but also to ensure that the user in the actual operation.

3 Theoretical Framework of The Translation Strategy

Guo Qingqing[7](2024) mentioned the application of communicative translation theory in translation practice which exploring the Chinese translation techniques of the pass participle tense in scientific and technological texts, while Chen Miao[8] and Liu Zhengxi (2024) discussed the post-translational editing strategy based on the translation conversion theory. Luo Haoyu[9] (2024), based on the theory of ecological translation, discusses the difficulties in the translation of scientific and technological texts, and puts forward a series of translation strategies in order to achieve dynamic balance and the best realization of translation purposes in the translation process. Based on the theory of functional equivalence, Zhang Lei[10] and Bao Jun (2024) made an in-depth analysis of the difficulties of scientific and technological text translation and put forward corresponding countermeasures. Their research shows that the theory of functional equivalence has significant advantages in guiding the translation of scientific and technological texts, which can effectively solve the difficulties in the translation of scientific and technological texts and improve the accuracy and readability of the translation. These studies highlight the guiding significance of translation theory for translation practice and provide useful references for future translation research. The process of translating the agricultural machinery operation manual involves the in-depth analysis and effective processing of the language characteristics. Agricultural machinery operation manual usually has the characteristics of strong technical, rich terms, clear logical structure, concise expression is its basic requirements. To this end, the application of the translation strategy should consider the following five aspects.

First, the importance of terminology norms is indisputable. When translating the operation manual, the language characteristics and translation purposes should be considered comprehensively, and the appropriate translation strategies should be selected. For accurate translation of industry standard terms, refer to industry related dictionaries, standards and official technical documents to ensure the professionalism and consistency of translation. At the same time, the dynamic equivalence theory can be applied to convey the same technical information under different cultural back-

grounds. In the case of standard terms, the use of non-technical terms should be avoided to reduce the risk of misunderstanding.

Secondly, considering the actual operation needs of users, the translation strategy should be selected with intuitive and understandable expressions. For example, using active voice, rather than passive voice, can enhance the clarity and execution of instructions. If in the operation step, using "Please check the oil level" is better than "the oil level should be checked". In addition, simplifying the sentence structure, avoiding long sentences, improving the efficiency of information transmission, can better serve the target user groups.

The narrative method adopts step-by-step instructions and numbered lists, which helps readers to clearly understand the operation process and improve the readability. For complex mechanical operations, the strategy of combining text and text can effectively improve the depth of understanding. Using the diagram or flow chart must keep consistent with the text descriptions to ensure the user's synchronous understanding of visual and text information.

Moreover, cultural adaptability is also an aspect that cannot be ignored. Translators should not only transform the technical information, but also take into account the regional usage habits and cultural background. For the expression of warning discourse, the common expression in English is "Must", which indicates clear orders or prohibitions, but the expression of Chinese culture uses the translation strategy: "Please Do Not". Translate "you" to " Respected you". English habits directly highlight the facts, such as "Danger", while in Chinese it often corresponds to subjective behavior: "pay attention to safety". In practice, translators should conduct multiple rounds of proofreading and auditing to ensure the accuracy of translation. A feedback mechanism can be set up to collect users' opinions and update the content of the operation manual in time to adapt to the changes of new technology and new products. Using computer-aided translation (CAT) tools, the terminology bank and translation memory bank can significantly improve the translation efficiency and consistency.

In summary, these translation strategies in the practical application of agricultural machinery operation manual, help to achieve high-quality translation and promote the effective transmission of information. For specific user groups, standardized translation and clear expression will greatly improve the security and efficiency of the operation, and reduce the risk of operational errors caused by misunderstanding. Therefore, the translation work must uphold the principles of professionalism, precision and practicality from beginning to end, so as to maximize its value in practical application.

4 Strategy Application and Case Analysis

The application of strategies in the translation of agricultural machinery operation manual should be refined according to its language characteristics to ensure the combination of professionalism and user friendliness. In this paper, the translation and processing strategy of agricultural machinery operation manual are deeply discussed, especially the strategy selection and application of English-Chinese translation. "Only

by grasping the translation purpose of texts and the functions that need to be realized in reality can we establish effective translation principles," [11] In their research, Jia Yan[12] and Zhang Junqing (2022) discussed in detail the challenges in the translation of operation manuals, such as preposition processing, the accurate transmission of professional knowledge and the appropriateness of expression, and proposed a series of translation strategies to improve the quality of translation.

For the translation of terms, a combination of "naturalization" and "alienation" is adopted, especially when involving the specific functions of agricultural machinery and equipment, to adjust the terms to more understandable expressions. "A term is often a specific interpretation of the same word in different fields, but in a language service, different interpretations are not just the translation of the word, but the meaning of a word in a specific field, where these words can only be used in such a specific way"[13] ,For example, "Baler" is normalized to "bundling machine "."Baler" in English refers to the equipment used to press hay or other crops into bundles. Although "baler" can be translated as "bundling machine" or "packing machine". It not only maintains the versatility of the industry, but also conforms to the language habits of the target users.

In terms of given parameters and values, special attention should be paid to the accuracy requirements, “Sentences in Chinese are shorter and more rhythmic than in English, and the effective method is to combine them into long sentences in English”[14].such as the working frequency of agricultural machinery, load and fuel consumption, and to maintain the accuracy of the numbers, such as "10 tons" clearly marked rather than fuzzy processing. In addition, the translation of technical indicators, such as "power output of 100 horsepower", requires standardized units and avoids dialect or obscure terms.

In terms of sentence structure, simplifying the complex passive voice and transforming it into the active form can effectively improve the readability of the operation manual. In the case of "All personal protective equipment must be worn before cleaning the filter bowl", it translates to "you must wear all the personal protective devices before cleaning the filter cover", making the expression more straightforward.

Take the point enumeration method to decompose the lengthy instructions into clear steps, such as the operation steps of the braking system, such as: "Turn pump 1 on (P1). To turn the pump on, select the colored box next to P1 and change the ‘X’ to a check mark. Repeat the process for pumps 2 and 3 (P2 and P3). There is no preposition process for the order in this English text, translated into Chinese " 1. Open pump 1 (P1).2. To turn on the pump, select the color box next to P1.3. Change "X" to sign. Turn on pumps 2 and 3 (P2 and P3)" Or like：To operate the machine, first ensure that the power supply is connected. Then, check the fluid levels and make sure that all safety guards are in place. Next, press the power button to turn on the machine. After that, select the desired mode of operation using the control panel. Finally, monitor the machine during operation to ensure it is functioning correctly." The English text contains "next", "after that" and "finally", which translates to " The steps to operate the machine are as follows: 1. Ensure that the power connection is normal. 2. Check the liquid level to ensure that all safety guards are in place. 3. Press the power button to open the machine. 4. Use the control panel to select the desired operation mode.5.

Monitor the machine during the operation to ensure its normal operation." In both Chinese translations, the operation process is clearly marked with Arabic numerals "1.2.3...", which is more instructive for users at different levels.

For the use of symbols and illustrations, to ensure its consistency with the original foreign language, and with a short illustrative text. "As a language resource base, terms are often used to express the concepts of specific knowledge fields. Nowadays, it is common for terms to represent the concepts in non-linguistic ways, such as graphic symbols, formulas and so on" [15] For example, using standard job symbols, such as "⚙" (gear) to represent working modes, enhance understanding. In the translation, you can use the form of "graphic description + brief description" to correctly express the operation content, and reduce the language barrier. If only the security sign in the source text. A brief can be added to the Chinese translation: Before installing or maintaining the baler, please carefully read and understand all the safety signs to ensure safe operation.

Transliterations can also be used as a strategy in specific situations, especially when Chinese lacks relevant expressions. For example, "hydraulic" should be transliterated with enclosed, such as "Hydraulic" to ensure that the user fully understands the function of the device. In addition, ensure the accuracy of equipment models and parameters to avoid operation errors caused by translation errors.

Through the above strategy application and case analysis, the practicability and effectiveness of the agricultural machinery operation manual are significantly improved, so that the translation results not only meet the professional requirements, but also have user experience, providing strong support for the promotion and use of agricultural machinery equipment. In the process of the operation manual, it is important to fully consider the needs and language habits of the target readers. By controlling the accuracy of the terminology, ensure the professionalism and consistency of the technical expression, and preferentially select the words that meet the industry standards to ensure the universality and comprehension. In addition, a localization strategy, consistent with region-specific language habits, is supplemented by appropriate examples and cultural background to enhance the readability of the manual.

During translation, ensure that the terms are properly applied in the context. For equipment use instructions, especially safety precautions, use straightforward and understandable language to avoid the accumulation of professional terms, to ensure that users can quickly understand and execute accurately. At the same time, important warning statements should be marked to ensure that clear operation guidelines are given to reduce misunderstandings and improve security. The point enumeration method is adopted to decompose the lengthy instructions into clear steps.

Finally, after translation, repeated proofreading is required, especially for the accuracy of professional terms, units of measurement and digital information, combined with practical operation, to verify the effectiveness of translation through field testing, timely adjust improper expression, and enhance the practical value of the manual. Through the review of industry experts and native speakers, to ensure that the translation content can be widely accepted and used in the context of diversified users, reflecting the professionalism and value of the translation work.

5 Conclusion

As an important part of agricultural science and technology text, the work of agricultural machinery operation manual is of great significance to promoting international agricultural technology exchange and improving agricultural production efficiency. The translation of agricultural machinery manual is faced with challenges such as numerous professional terms and differences in expression between English and Chinese. Need to pay attention to include the accuracy of the terms, language fluency and the integrity of information, machine translation tools is beneficial to improve the translation quality on the database construction, in addition, the combination of translation theory and translation practice is another important way to improve the quality of translation, including but not limited to literal translation, translation, translation, minus translation, etc.

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