



A Study on Terminology Consistency in the Chinese Translation of Consumer Electronics Manuals from the Perspective of Functional Equivalence Theory

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Abstract

Consumer electronics user manuals are a combination of technical information and operational instructions, and their translation quality directly affects user experience and product safety. Guided by Eugene Nida's Functional Equivalence Theory, this paper conducts a systematic study on the high-frequency issue of terminological inconsistency in the Chinese translation of such texts, incorporating international standards' requirements for consistency and comprehensibility of use information. Taking the official user manual of Samsung Galaxy Buds 3 true wireless earphones as a typical corpus, this paper analyzes problems such as terminological drift and syntactic redundancy from the two main dimensions of lexicon and syntax, and proposes specific translation strategies for achieving functional equivalence as well as process control methods covering pre-translation, in-translation, and post-translation stages, aiming to provide references for high-quality Chinese translation of consumer electronics user manuals.

Subject Areas

Linguistics

Keywords

Functional Equivalence Theory, Consumer Electronics User Manuals, Terminological Consistency, Chinese Translation Strategies

1. Introduction

Against the backdrop of the booming global consumer electronics industry and

rapid product iteration, user manuals serve as a crucial link between products and users, making translation quality of paramount importance. Unlike literary or general texts, consumer electronics user manuals possess distinct informational and operational textual characteristics: they require extremely high accuracy in conveying technical parameters, while simultaneously guiding users through operations with clear and unambiguous instructions. However, in current practice, Chinese translation of such texts still faces significant challenges, among which terminological inconsistency is one of the major issues that undermines translation comprehensibility, increases users' cognitive burden, and may even lead to operational risks [1].

Functional Equivalence Theory emphasizes that the response of target language readers to the translation should be as equivalent as possible to the response of source language readers to the original text [2], providing a solid theoretical framework for evaluating and improving the translation quality of user manuals. Meanwhile, the international standard IEC/IEEE 82079-1:2019 explicitly lists "consistency" and "conciseness" as fundamental quality principles for product use information [3], and its domestic equivalent version GB/T 19678.1—2018 also puts forward the same requirements for the composition and expression consistency of use instructions [4]. Therefore, under the guidance of Functional Equivalence Theory, systematic research on terminological consistency in Chinese translation of consumer electronics user manuals has not only theoretical value but also urgent practical significance. This paper aims to explore paths and methods for achieving terminological consistency equivalence through specific case studies.

This study adopts a qualitative case analysis method, relying on Functional Equivalence Theory and the IEC/IEEE 82079-1:2019 standard to critically evaluate the translation. The corpus is sourced from the Samsung Galaxy Buds 3 User Manual (2024 edition) officially published on Samsung's official website and its official Simplified Chinese translation [5], covering full chapters including safety precautions, functional operations, and troubleshooting, totaling approximately 8000 English words. As a high-end TWS (True Wireless Stereo) earphone product from a mainstream global manufacturer, the Samsung Galaxy Buds 3 integrates precision acoustic hardware, multi-point Bluetooth protocols, and touch interaction firmware. Its user manual covers a complete closed loop from basic physical connections to complex software settings, epitomizing the textual complexity of "hardware-software integration" in contemporary consumer electronic products, thus possessing benchmark representativeness within the industry. To ensure the objectivity and reproducibility of the analysis, the selection of four groups of translation examples follows the following criteria: typicality (selecting sentences involving core functions, high-frequency operations, and safety warnings), contrastiveness (selecting segments where there is obvious room for optimization in the official translation for comparative analysis), and hierarchical coverage (respectively covering the two core dimensions of lexicon and syntax to reflect problems at different levels of non-equivalence).

2. Overview of Eugene Nida's Functional Equivalence Theory

The core of Functional Equivalence Theory proposed by American translation theorist Eugene Nida [1] lies in pursuing equivalence between the translation and the original text in terms of function, enabling target language recipients to understand and appreciate the translation in a manner roughly similar to source language recipients. This theory encompasses four levels of equivalence: lexical equivalence, syntactic equivalence, textual equivalence, and stylistic equivalence.

In the context of consumer electronics user manual translation, these four levels can be concretized as follows: Lexical equivalence requires that the same technical term, component name, or status indicator maintains a unique and stable translation throughout the entire text, avoiding conceptual confusion caused by synonymous variations. Syntactic equivalence requires breaking free from the constraints of English sentence structures and transforming them into active voice, imperative sentences, and short sentence sequences that conform to the conventions of Chinese operating guides, ensuring the immediate operability of instructions. Textual equivalence focuses on the logical order and cohesion of information modules (such as safety warnings, prerequisites, operating steps, and troubleshooting), ensuring that users can complete all necessary operations along a linear path without confusion. Stylistic equivalence requires the translation to maintain the objective, accurate, and concise stylistic register of technical texts, avoiding literary embellishment or casual colloquialism. Terminological consistency is the cornerstone for achieving lexical and stylistic equivalence and directly relates to the functional realization at the syntactic and textual levels.

3. Linguistic Features of Consumer Electronics User Manuals

As a special type of technical-applicational writing, consumer electronics user manuals have distinctive linguistic features that impose specific constraints on translation.

3.1. Professionalism and Dense High-Frequency Terminology

Such texts involve a large number of proper nouns, component names, and technical abbreviations, such as “USB-C port”, “wireless charging coil”, “ANC (Active Noise Cancellation)”, and “IP67 rating”. Their “professionalism” is reflected not only in these purely technical terms but also in many “semi-professional words” or phenomena of “general vocabulary specialization”. For example, “pair” generally means “matching” in everyday contexts, but in Bluetooth device manuals, it specifically refers to “establishing a Bluetooth connection”; “pinch” transforms from a common action verb into a specific gesture instruction meaning, “pinching the earbud stem with thumb and index finger”. If these high-frequency, core words are translated inconsistently, it will directly lead to user operation failures.

3.2. Objectivity and Instructiveness

To objectively state facts and clearly direct operations, English user manuals ex-

tensively use passive voice and nominalized structures to highlight objectivity, and employ clear imperative sentences or conditional clauses to guide operations. However, Chinese technical texts tend to prefer active voice and verbal phrases when expressing instructions. Therefore, during translation, it is necessary to complete the conversion from “static” description to “dynamic” instructions while keeping objective information intact, thereby achieving operational intuitiveness.

3.3. Balancing Conciseness and Safety

For reasons of space and efficiency, the language of user manuals strives for conciseness, often using abbreviations and compact sentence structures. However, this “conciseness” must never come at the expense of safety. Safety-related warnings, cautions, and danger notices (corresponding to DANGER, WARNING, CAUTION) not only require absolutely accurate information but also demand that their linguistic force and typographic prominence be equivalent to the original text, ensuring that risk information compels users’ attention to the same degree.

4. Case Analysis

Before conducting the case analysis, this study established a dual verification mechanism based on theoretical standards to identify translation problems. The identification methods are as follows: First, a “reader response” retrospective test was conducted based on Functional Equivalence Theory to simulate the cognitive path of Chinese users executing instructions. Second, compliance reviews were carried out on terminology and sentence structures according to the quantitative requirements of Clause 7.2 of the IEC/IEEE 82079-1:2019 standard [3] [4] concerning “consistency” and “comprehensibility”. To strengthen analytical logic, the following simplified inspection checklist was developed for corpus screening (See **Table 1**).

Table 1. Simplified inspection checklist for Chinese translation quality of consumer electronics user manuals.

Inspection Dimension	Inspection Points (Based on Functional Equivalence Theory and IEC 82079-1 Standard)
Terminological Consistency	1. Does the same component/function maintain a single translation throughout the text? (Corresponds to IEC 82079-1 “Consistency”) 2. Are specialized terms (e.g., ANC, IP67) and semi-specialized verbs (e.g., Pinch) accurate and unambiguous?
Syntactic Appropriateness	3. Are passive voice and nominalized structures converted into active/imperative sentence patterns customary in Chinese? (Corresponds to “syntactic equivalence” in Functional Equivalence) 4. Are complex clauses broken down into short sentence sequences that conform to Chinese linear logic? (Corresponds to IEC 82079-1 “Conciseness”)
Safety Equivalence	5. Is the force and visual prominence of warning messages (WARNING/CAUTION) equivalent to the original text? (Corresponds to IEC 82079-1 “Safety”)

The following sections will conduct in-depth analysis of specific cases based on the issues revealed by the above checklist.

4.1. Lexical Level

The key to lexical equivalence lies in determining word meanings according to the professional context and ensuring that the translation remains consistent throughout the text.

Example 1: Determination and Unification of Specialized and Semi-Specialized Terms

Original: Ensure the earbud tips are properly attached. Clean the earbuds and the charging case with a dry cloth.

Suboptimal Translation: 确保耳塞头佩戴正确。...用干布清洁耳机和充电仓。

Improved Translation: 确保硅胶耳帽佩戴正确。用干布清洁耳机和充电盒。

Analysis: This problem belongs to the category of recurring systemic issues (terminological drift). Through a paragraph-by-paragraph review of the entire corpus of approximately 8000 words, the phenomenon of inconsistent translations for core component nouns is found not to be an isolated case. Specifically, “charging case” alternately appears as “充电仓” and “充电盒” in different sections of the manual, totaling 7 occurrences; the confusion between “earbud tips” and “earbuds” reappears 4 times in accessory descriptions and cleaning tips, representing a systemic drift caused by a lack of cross-chapter terminology management. In this sentence, “earbud tips” refers to the silicone ear sleeves (or ear caps) fitted over the earbud’s sound outlet, which are consumables, whereas “earbuds” refer to the earbud bodies themselves. The suboptimal translation renders “tips” as “耳塞头”, which can easily be confused with the concept of “earbuds” (耳机). Moreover, “charging case” has two different translations, “充电仓” and “充电盒”, at different positions within the same manual, undermining uniformity. By clearly defining “earbud tips → 硅胶耳帽”, “earbuds → 耳机”, and “charging case → 充电盒” in the terminology list and solidifying these choices throughout the text, lexical equivalence for core component names is achieved, preventing user misunderstanding.

Example 2: Precision and Consistency of Gesture Operation Verbs

Original: Pinch the earbud stem to play or pause. Double pinch to skip forward.

Suboptimal Translation: 按压耳机柄播放或暂停。快速按两下跳到下一首。

Improved Translation: 捏一下耳机柄以播放/暂停。连捏两下以跳至下一首。

Analysis: This problem belongs to the category of recurring systemic issues (chaotic system of manipulation verbs). Within the gesture command subsystem covered by this manual, “pinch” is successively translated as at least 4 non-equivalent expressions such as “按压”, “捏压”, and “夹一下” across 9 operational steps, while “tap” similarly fluctuates among “触摸”, “点击”, and “轻触” in 6 places. This indicates that the translator did not establish a minimal terminology set for “manipulation verbs—translations”, making it a typical reproducible systemic problem. “Pinch” is a unique squeezing operation specific to this earbud model,

differing in operational mode from traditional “pressing” (press) or “touching” (tap). The suboptimal translation mixes “按压” and “按”, failing to accurately convey the operation method while also creating terminological inconsistency. Unifying “pinch” as “捏” allows for a more vivid and accurate conveyance of the specific gesture, distinguishing it from operations like “press” (按) and “tap” (点按), thereby ensuring the precision and consistency of operational instructions.

4.2. Syntactic Level

Syntactic equivalence requires reorganizing sentence structures to conform to Chinese expression habits and highlight operational instructions.

Example 3: Conversion of Passive Voice and Nominalized Structures

Original: The charging case can be charged by placing it on a Qi-certified wireless charger.

Suboptimal Translation: 充电仓可以被充电, 通过将其放置在 Qi 认证的无线充电器上。

Improved Translation: 将充电盒置于 Qi 认证的无线充电器上即可进行充电。

Analysis: This problem belongs to the category of patterned issues (literal translation of English static sentence templates). English user manuals heavily rely on “can be done by V-ing” structures to express operational processes. Such sentence patterns appear over 20 times in the corpus (including core steps such as charging, pairing, and resetting). This example represents a lack of native language conversion for a class of high-frequency syntactic templates, rather than an occasional complex sentence problem. The literal translation of the passive voice and “by...” structure results in lengthy Chinese sentences with the core action placed at the end, which does not meet the expectation of Chinese users reading operating guides for an “action-first, method-second” sequence. Converting the passive voice into an active description, moving the core action of “charging” forward, and positioning the charging method “placed on...” as a precondition makes the sentence more concise and the instructions more direct.

Example 4: Decomposition and Restructuring of Complex Conditional Sentences

Original: If the earbuds do not charge when placed in the case, ensure that the charging contacts on both the earbuds and the inside of the case are clean and free from debris.

Suboptimal Translation: 如果耳机放入盒中未充电, 请确保耳机和充电盒内部的充电触点清洁且无杂物。

Improved Translation: 若耳机放入盒中未充电, 请检查并清洁耳机与充电盒内部的充电触点, 确保无异物。

Analysis: This problem belongs to the category of locally reproducible issues (tendency toward “static description” in troubleshooting conditional sentences). There are 5 groups of “If...do not..., ensure that...” conditional-static description structures in the troubleshooting chapter, with this example being the most typical

representative. Although such sentence patterns are “not wrong” from a literary perspective, their repeated occurrence in operational contexts can accumulate users’ cognitive load. Therefore, they should still be regarded as patterned issues arising from the same writing template. The original English sentence uses an object clause introduced by “ensure that...”, carrying a high density of information. While the literal Chinese translation is not incorrect, it could be further optimized into shorter, more direct instructions better suited for troubleshooting scenarios. Decomposing the static description of “ensure...” into a dynamic instruction sequence of “check and clean” and concretizing “free from debris” as “ensure no foreign objects” makes the entire troubleshooting process (check-clean-confirm) more linear and executable, achieving better syntactic equivalence and communicative effect.

5. Conclusions

It should be pointed out that this study has certain limitations in its research design that need to be addressed in future research. First, the corpus of this study is taken solely from the English-Chinese bilingual user manual of a single high-end TWS earphone product, the Samsung Galaxy Buds 3, constituting a qualitative case study of a single product and a single language pair. Although paragraph-by-paragraph review has proven that problems such as terminological drift and literal translation of sentence templates constitute recurring common patterns within the manual, the research conclusions cannot be automatically extrapolated to broader categories of consumer electronics (such as smart home hubs, major appliances, etc.) or more complex multilingual parallel localization chains. Second, the identification and attribution of translation problems in this paper mainly rely on textual-level evidence (theoretical retrospection + standard compliance review), without introducing quantitative empirical data such as user usability testing to verify “to what extent inconsistency would materially increase the risk of operational errors”. These boundaries suggest that future research should, on the basis of expanding the corpus scale, combine terminology management tool audits with user behavior testing to further advance the current textual criticism towards a measurable empirical translation quality model.

The ultimate goal of translating consumer electronics user manuals is to ensure that users can use products safely, smoothly, and without confusion. Functional Equivalence Theory provides a clear evaluation criterion for this goal. Research shows that terminological consistency is a key prerequisite for achieving functional equivalence, especially lexical and stylistic equivalence. It is by no means a simple task of unifying wording, but involves a deep understanding and integration of the product’s technical context, user cognitive habits, and industry standards and norms.

The above case analysis indicates that the loss of terminological consistency is not due to individual slips of the pen but results from the absence of an institutionalized terminology management process. Therefore, translators can draw

upon mature terminology management frameworks for translation scenarios [6][7] to upgrade consistency assurance from “personal intuition correction” to “process-based control”. To achieve high-quality translations, translators need to adopt a systematic workflow. In the pre-translation stage (corresponding to the terminological consistency issues in Examples 1 and 2): Targeting the systemic terminological drift problems illustrated in Example 1 (where “charging case” appears as “充电仓/充电盒” 7 times across chapters, and “earbud tips” and “earbuds” are conceptually confused 4 times) and Example 2 (where “pinch” appears in 4 non-equivalent translations across 9 operations, and “tap” fluctuates 6 times), it is essential to establish and lock a core product terminology database and translation style guide before translation. Component nouns (e.g., charging case → 充电盒) and gesture verbs (e.g., pinch → 捏, tap → 点按) should be set as “forbidden free translation” fields in CAT tools [8] to prevent the risk of synonymous variations across chapters from the source. In the in-translation stage (corresponding to the syntactic template literal translation issue in Example 3): Addressing the problem of post-positioned actions and obscure instructions caused by the templated literal translation of over 20 instances of “can be done by V-ing” passive sentence patterns as seen in Example 3, translators need to break free from the constraints of the source language structure during translation. They should flexibly apply techniques such as sense determination, voice conversion, and sentence restructuring to transform English static passive structures into active imperative sentences customary in Chinese, aligning with Chinese users’ reading habit of “action first, condition later” while accurately conveying technical information, thus balancing accuracy and fluency. In the post-translation stage (corresponding to the static troubleshooting instruction issue in Example 4 + residual terminology verification from Examples 1 and 2): Aiming at the cumulative cognitive load problem caused by the 5 groups of “If...do not..., ensure that...” static conditional sentences in Example 4, as well as potential variant translations missed by the pre-translation terminology database, two rounds of specialized review should be conducted after translation. The first is a full-text terminological consistency scan [9] to check whether multiple versions of translations exist for the same source term. The second is operability verification, which involves decomposing static troubleshooting descriptions into linear action sequences of “check-clean-confirm”, ensuring that the translation is not only fluent Chinese but also a user operation guide that can be directly executed.

Conflicts of Interest

The author declares no conflicts of interest.

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