

## **Quantitative Analysis of Patent Translation**

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### **ABSTRACT**

This paper evaluates patent translation quality from the perspectives of readers. An integrated Translation Quality Assessment model, combining theory and practice, is devised in this research to evaluate patent abstract translations, and the evaluation is divided into three parts. The first is error of meaning, the second part deals with errors in form, and the last part is error of compliance, which includes readability, comprehensibility, clarity, and concision levels. A simple statistical analysis was used to explain the general features found in this translation quality assessment, namely range, median, and mean. The overall results demonstrate that both Chinese and English texts had complied with the standards from the patent office for readable, comprehensible, clear, and concise texts, and a further analysis revealed that Chinese text quality influenced the quality of the English translation. In addition, it was found that the more errors there were in a text, the less likely it was to comply with given standards.

### **KEYWORDS**

Translation Quality Assessment, patent translation, patent abstract, error analysis, readability, comprehensibility, concision, clarity.

## **1. Introduction**

A translation quality assessment (TQA) may be performed by the client, the reviser, the Quality Control or Quality Assurance of a company, professional translation critics or translation teachers, or the readers (Newmark 1987: 185). Professional companies that are in a translation-related industry and recognise the importance of TQA would adopt or develop some form of quality control system, varying from simple procedures involving proofreading or editing by a second person to a more complex system which incorporates several stages, such as translation, revisions, editing, proofreading, and QA (Schiaffino and Zearo 2006: 53).

TQA plays an indispensable role in the translation-related business, and one of the simplest reasons would be the justification of the assessment result, for “more than in any other field perhaps, lay people consider they have the right to tell practitioners how to do their job, and feel fully justified in interfering on the slightest pretext” (Shuttleworth 1997:78). Providing a transparent and effective system to evaluate translation quality helps in eliminating unnecessary and insignificant comments made on the basis of personal impressions, securing the “professional standing” of the translator, and building confidence for student-translators (ibid.).

In academia, where TQA is performed regularly and intensively in translation programs, institutions and teachers often face criticisms from the students for lacking a systematic approach, and for impressionistic marking. The remark of Hönig is of relevance in this situation: ‘TQA is carried out daily, often in an unreflected and sometimes authoritarian way’ (1998: 6). However, in recent years, many translation schools have upgraded their assessment methods, as this issue gains significant amounts of focus on conference agendas. Most academic institutions have developed strict and thorough criteria for translation marking. TQA is more than necessary, especially in training institutions, for it develops translator competence, widens domain knowledge and subject matter, enhances language comprehension and proficiency, and finally, equips student-translators with practical translation techniques (Newmark 1987: 185).

In practice, the objective of TQA is to provide quality assurance and quality control along the product line, with translations as end products. The quality of the translated text is maintained according to a set of criteria standardised by relevant organisations with specific evaluating mechanisms. The yardstick used to assess the translation quality varies, and no matter how many criteria are included in the evaluation, the objectivity of the evaluating metrics can remain more or less controversial.

This explains why Kirsten Malmkjaer (1998:70) regards the issue of TQA as “one of the most wretched in translation studies [...]”. Recognising this complexity in TQA, Anthony G. Oettinger (1963: 449) considers translation judgments as more difficult than translating. Adding more to the concern about the subjective characteristics of TQA, Reiss (2000: 6) comments on translation criticisms that claimed to be objective and representative as

lacking “any defined points of reference, overarching integrity, or pertinent categories, so that the final result is an impression of complete arbitrariness.”

## **2. Translation quality assessment approaches**

The standards used to regulate translation quality, as perceived by Newmark (1987: 192), “are relative, however much one tries to base them on criteria rather than norms.” Thus he proposed a two-way assessment approach: functional and analytical. A functional approach is a general approach that evaluates the completeness of ideas in the translations, and could thus be subjective and unreliable. The analytical approach is a detailed approach that evaluates the translation by sections for easier identification of translation mistakes (1987: 189).

According to Newmark, both the source text and the target text are equally important, yet one should take into account the function and the purpose of both source and target texts, provide a relevant cultural context, and include the perception of the translator in the evaluating process. By considering the function and the purpose of the text, Newmark echoes the principles of functionalist approach to translation assessment, where the purpose is the decisive criterion for the quality of a translation.

Schäffner (1998:1) indicates that the assessment criteria for translation quality depend on the purpose of the assessment and on the theoretical framework the evaluator applies to assess translation quality. Reiss (2000:101-102) also views the functional category as a choice for the evaluator in the case where the translator or the client specifies a more restricted group of readers for the target language version, in which different criteria should be considered for translation. The notion of the purpose of TQA is thus linked to linguistic correctness, text-typology, and communicative rules and conventions of the target language and culture (Schäffner 1998:3).

Despite the fact that linguistic correctness is stressed more as a typical TQA criterion in terms of the target language system, Reiss (2000:66) subdivided this broad criterion into semantic equivalence, lexical adequacy, grammatical correctness, and stylistic correspondence. The weighting of

each subdivided criterion in a given text depends on the type of the text, because “the kind of text generally determines the order in which the linguistic elements should be considered” (ibid.).

### **3. Devising a TQA model for patent translation assessment**

In order to devise an objective TQA system, the evaluation criteria in this study were built on translation theories of text typology, translational norms, and functionalism, although the merits of other existing TQA models were also considered, in particular, the error category arrangements from J.D. Edwards’ QA Form (Schiaffino and Zearo 2002: 14), the severity level of errors from the LISA QA Form (*ibid.*:12) and the Translation Quality Index (TQI) (Schiaffino and Zearo 2006), as well as the three error categories of the TQI.

The Localization Industry Standards Association, or LISA, is a Swiss-based company which specialises in globalisation. The Quality Assurance Form is designed to collect information about errors, issues, and relevance by using a checklist, the use of which in the sampling process ensures the completion of every action. The QA Form is used in localisation projects with a customisable set of templates, forms and reports, built into an Access database, which contains a list of language codes and language names, a predefined list of severity levels and weights, a list of error categories, a list of tasks performed by reviewers, and predefined metrics to define a Pass/Fail grade.

A software application company, J.D. Edwards, adopted a modified version of the LISA QA form and, under the main error categories, are subcategories of errors and their respective weightings. While the LISA QA Form identifies the severity level of errors, J.D. Edwards’ QA Form calculates errors in accordance with a percentage of the weight of each error category. However, the point of referencing this form is not so much to apply weightings to the evaluation, but to categorise errors into smaller units. The error categories which satisfy the property of patent abstracts are considered, including the error categories of incorrect meaning, non-standard terminology, inconsistent terminology, grammar errors, syntax errors, and punctuation errors.

The TQI is a quantifiable TQA model developed to “measure what can be measured, and make measurable what cannot be measured” (statement of Galileo Galilei provided in Schiaffino and Zearo 2006:53). There are three error categories, namely errors of form, errors of meaning, and errors of compliance. Errors of form refer to grammatical mistakes, and can be detected by reading the target text alone, while errors of meaning demand a comparison of the source text and the target text in order to identify mistranslations or inaccuracies, and errors of compliance refer to the special requirements of the clients, such as an approved style or preferred terminology. Errors are determined as being major or minor depending on the consequences of the error or its visibility. In short, the quality of the translation under the TQI model is evaluated using the so-called ‘three-point rule,’ which is accuracy, grammatical correctness, and compliance with the instructions received.

An integrated TQA model, combining theory and practice, is devised in this research to evaluate patent abstract translations, and the evaluation is divided into three parts. The first is error of meaning, which is important to avoid the consequence of mistranslation of technical documents. The second part deals with errors in form, where text typology and translational norms are highlighted, and the texts are evaluated in accordance with how they should be presented linguistically. The last part is error of compliance, which includes readability, comprehensibility, clarity, and concision levels, and these four criteria are adopted from the World Intellectual Property Organization (WIPO) writing standards (WIPO 1994), and comply with the theoretical framework of translation theory.

### **3.1 Selecting evaluators**

In their TQI, Schiaffino and Zearo (2006:55) propose that a professional translator is not necessarily a good evaluator, since a good evaluator takes the objectivity of a comprehensive evaluation into consideration, which does not merely include personal judgment or a perception gained by a few glances. Thus evaluators in this study were given training tailored for the TQI quality measurement method so that they were able to distinguish subjective and objective factors. Schiaffino and Zearo (*ibid.*) also mention that the translation profession is evaluated by ‘its price, its turnaround time, and its quality’ and, thus, having taken into account the resources, time,

and money available for this research, care was taken to choose the appropriate participants.

In order to ensure the validity of the evaluation result, the criteria for selecting respondents for this study were restricted to those specialists working in related fields in the patent translation profession, and those qualified to conduct an evaluation of the English language. To be more precise, considerations for qualified evaluators encompassed their background knowledge, expertise and mother tongue, and the proficiency of Chinese speakers was tested in both Chinese and English.

Qualified evaluators included 13 teachers of the English language and linguists, 4 translators of the English and Chinese, 6 translators-cum-teachers who also taught translation in academic institutions at university level and above, and 13 educated specialists such as engineers, technicians, and legal experts, who held at least a university degree and who worked in respective technical fields. The reason for choosing these evaluators was that English language teachers are able to justify the correct usage of the English language, specialists are able to tell whether or not the text is understandable with technically correct information, and translators and translators-cum-teachers are able to spot any falsely interpreted information between the two languages.

Personal correspondence was used in the search for these 36 qualified evaluators, and working as both a translator and a teacher over the past few years provided me with opportunities to meet other specialists and experts in various fields. In terms of the mastery level of the English language by the Chinese speaking group, there were four teachers of the English language, two legal experts working in the patent field in the UK and the US, five technicians and engineers who had received training and degrees from English-speaking countries and, among the seven professional translators holding degrees in translation and interpreting programs, four are currently teaching translation and interpreting in academic institutions.

### **3.2 Reliability**

In a research setting, reliability can be defined as being the 'consistency of measures across different conditions in the measurement procedure' (Bachman 2004:153). In other words, a statistical calculation of reliability tests the consistency and stability of the test results. Nonetheless, various factors can affect the final outcome of an evaluation, and bring about an inconsistent measure or measurement error and, by the same token, an evaluation can be deemed reliable if it is free from measurement error. This highlights the importance of minimising the measurement error by identifying and controlling potential sources of errors involved in inconsistencies among different evaluators.

Part II concerns the four compliance criteria, and the involvement of both Chinese and English evaluator groups creates sufficient cases for reliability computation. The evaluation results of the four compliance criteria in both Chinese and English texts are analysed using Cronbach's alpha, and the result of the Cronbach's alpha analysis demonstrates high reliability across the board.

In Part I and Part III, however, since the evaluators were divided on the basis of their native language, there were too few cases to compute with Cronbach's alpha, although reliability could still be judged in accordance with the qualifications of the evaluators. Not only were the four groups of evaluators selected on the strength of their professionalism in background knowledge and expertise, but they were also all involved in the field of patent translation to some degree.

### **3.3 Text sampling**

The material for this study was taken from the database published online by the Taiwan Intellectual Property Office (TIPO). The online database of TIPO — Taiwan Patent Search (TIPO 2008) — houses an immense amount of patent documents in both Chinese and English. This database was the only source of text sampling in this study.

Criteria for the selection of Chinese text samples included the subject field with the greatest demand for translation, the availability of patent abstracts

written directly in Chinese as the source language, and practical concerns for the feasibility of this research. Accordingly, the sampling procedure for Chinese texts followed several procedures: the use of statistical reports to determine the category where most patents were granted, the search on online databases with a key word for patent abstracts in a specific category, and the limitations on the amount of available records for representative data with significant value.

Knowing the original language in which the patent abstract is written is important for patent abstract translation analysis. Despite the fact that it is reasonable to believe the Chinese text is the source text while English is the translated version, it is found that some Chinese texts were translated into Chinese from foreign languages instead of being directly written in Chinese. In the case where the patent is filed by a foreign company outside Taiwan, the Chinese version of patent documents could be texts which have been translated into Chinese. These abstracts were therefore rejected for inclusion in the study.

### **3.3.1 Linguistic features of the five selected texts**

In order to examine the quality of the language and the structure of patent abstracts, five texts were selected for readers to evaluate the text quality based on their perception. These texts were selected and determined in accordance with distinctive features in sentence length, segmentation features, word variations, and readability scores. The analytical method applied to the selected texts was inclusive of syntactic analysis, lexical analysis, and textual analysis, as adopted from Tsai's (2010) "Text Analysis of Patent Abstracts."

From the text analysis of the 5-text corpus, it is acknowledged that the Chinese texts maintain a mean sentence length of 44.68 parsed words per sentence and an average word count of 90 words per abstract. The English texts, on the other hand, consist of an average of 99.6 words per abstract and 24.27 words per sentence. The Chinese type-token ratio, which fell between 47.47 and 70, was more than that of the English type-token ratio, which was around 49.51 to 53.57.

The mean Reading Ease value of the English texts is 55.58, and the average

Grade Level as computed from the Automated Readability Index, Gunning-Fog Index, and Flesch-Kincaid Grade Level test for these five texts is 12.68. The readability test results show that the selected texts are slightly more difficult than *Time* magazine, and can be comprehended without difficulties by people who have received at least 12 years of education.

Each patent abstract was evaluated by 18 Chinese native speakers and 18 English native speakers. It was expected that by coordinating deviations in readers' responses with textual analysis findings, texts with considerably better qualities could be identified, and corresponded with readability scores. The judgment for reader-friendly texts from the perception of the readers would certainly enhance the quality of translated text in the long run.

### **3.4 Evaluation of the texts**

The evaluation in this research is divided into three parts. Native speakers of the Chinese language with proficient English competency were invited to determine mistranslations or errors in the meaning of the translated text, since a comparison between the Chinese source text and the English translated text was required. Native speakers of English were recruited to spot grammatical mistakes in English translations of the selected texts and, in addition, both groups were requested to assess the compliance level of the target text in accordance with WIPO guidelines for the preparation of patent abstracts. The evaluation criteria for the compliance level included readability, comprehensibility, clarity, and concision. Chinese native speakers were also asked to rate the compliance level of the Chinese source text according to the four criteria.

For the convenience of separating the two languages, the order of the error categories was slightly altered, with errors of compliance being rearranged as Part II to serve as a borderline to delimit the evaluations completed by different language speakers.

The participants were asked to evaluate in accordance with the given criteria. For Part I and Part III, the criteria within different error categories were defined and severity levels were explained, with a sample evaluation table attached for reference. For Part II, the criteria for evaluating the

compliance level were respectively defined and the procedures were explained. Hard copies of the evaluation documents were provided to on-site respondents, and electronic files of the documents were emailed to those located abroad. Due to the limited amount of spare time available to most of the evaluators, time constraints were not imposed, and they were given the flexibility to return their feedback within two weeks from the day the documents were received.

#### **4. General findings on statistical analysis of TQA results**

A simple statistical analysis was used to explain the general features found in this translation quality assessment, namely range, median, and mean. The mean is the average of all values, and may be greatly affected by extreme values in a dataset. The median measures the middle value of a set of data in rank order, and its advantage is that it is not unduly influenced by extreme values in the dataset, and the range is the measure of data spread, or the difference between the largest and the smallest values.

The overall results indicate that on average, each of the selected texts contained 0.60 errors in meaning and 1.02 errors in form. In other words, on the whole, more grammatical mistakes were made than mistranslations in a given text. Although this was also evident in the comparison of the two median values, the low median values from the arithmetic mean indicate that the majority of evaluators identified fewer errors than average.

From the dispersion of values, it was found that the English evaluators were more consistent in their evaluation of grammatical errors than the Chinese evaluators of meaning errors were. However, the Chinese evaluators were found to be more consistent in judging whether the translated text complied with the requirements.

The overall results demonstrate that both Chinese and English texts had complied with the standards from the patent office for readable, comprehensible, clear, and concise texts, and a further analysis revealed that Chinese text quality influenced the quality of the English translation. In addition, it was found that the more errors there were in a text, the less likely it was to comply with given standards.

#### **4.1 Error counts analysis**

Upon comparing the evaluation results in the specific error subcategories, grammatical and lexical errors were found to account for the greatest number of errors, and further analysis on the severity level of errors indicated that, across the board, more lexical errors were rated as being major errors, and more minor errors were found in grammar. Since minor errors do not constitute a great impact on readers' understanding of the text, lexical errors were found to exert a greater effect on readers' perceptions of the text.

Interestingly, the median value of the minor grammatical error category was found to be greater than the arithmetic mean, which suggests that, while the central tendency for the occurrence of errors was two errors being identified per text per evaluator, there were a few extremely low ratings which degraded the overall average. In contrast, the average values of lexical errors in both major and minor error categories were higher than the median, which indicates the occurrence of a few extremely high ratings.

The least number of errors was found in the error categories of inconsistent terminology, punctuation, and inappropriate addition or omission. The overall response to the first two categories was positive, since the median in both error categories was zero. The punctuation error category, however, despite being the smallest in the range, had a median value greater than that in the minor error category and, again, this infers that, while most participants identified one error per text, a few evaluators identified fewer errors.

The inconsistent terminology category had the lowest error count at both severity levels, and this could be the result of the evaluators' lack of technical terminology knowledge, since one evaluator suggested the provision of an industry-wide terminology for cross-referencing in order to validate the findings of terminological consistencies. Statistically significant differences were found in all error categories of all the valid evaluations, and this difference is significant at the  $p=0.05$  level using an analysis of One-Way ANOVA.

The error count results illustrate that grammatical errors and lexical errors were the two most common errors, with fewer inconsistent terminological errors being identified. Syntactical errors were also evidently significant, since several evaluators mentioned that sentence structure and sentence length affected the readability, comprehensibility, clarity, and concision of a text.

## **4.2 Correlations between error categories**

Correlation is a statistical technique that determines whether and how strongly pairs of variables are related. Understanding the correlations between error categories enables the researcher to find out the degree of relationship between error categories and translation quality, or in other words, how error categories affect each other and how much influence does a particular error category have on translation quality.

From statistical analysis, correlations were identified between the error categories and, in respect of the four criteria in the meaning error category, it was apparent that these error categories were not only inter-related, but were also greatly impacted by terminological errors, which included errors of non-standard terminology and inconsistent terminology. Specifically, the error category of major inconsistent terminological errors had correlations with four error subcategories in Part I, and this observation indicates the importance of terminological quality in a text.

There are significant correlations between major and minor inconsistent terminology categories, and major incorrect meaning and major addition/omission error categories. The correlation between incorrect meaning errors and addition/omission errors is interesting because no significant correlation was found between minor incorrect meaning errors and minor addition/omission errors. One possible explanation for this polarised result is the opposing natures of addition and omission. The observed correlation between incorrect meaning errors and addition/omission errors may be explained as adding more details than necessary, which increases the probability of making meaning errors, and the exclusion of necessary information also increases the probability of making errors of meaning.

Feedback from the evaluators supports this observation with participants responding that, while the use of short and simple sentences enhances understanding, excessive detail and repetition of concepts affect concision. This suggestion guides the translators to include only a necessary amount of information in the translation. In spite of this, one thing is certain: the more inappropriate omissions and/or additions there are in a text, the more incorrect meaning there will be.

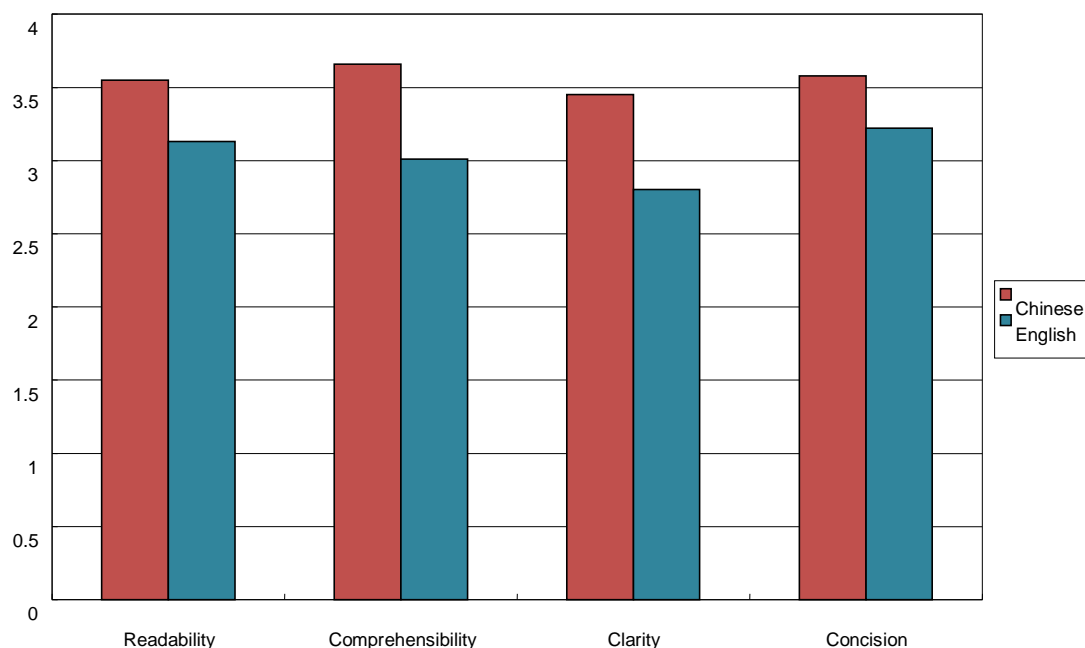
### **4.3 Compliance level**

The compliance criteria determine whether the translated text fulfils the requirements set by the client, and the client here is the patent office, responsible for formulating regulations on the writing of patent documentation. In order for patent documentation to serve its purpose, WIPO suggests that published information should be “clear,” “concise,” and that it should “enable the reader thereof, regardless of his degree of familiarity with patent documents, to ascertain quickly the character of the subject matter covered by the technical disclosure” (WIPO 1994). This is the foremost consideration for the evaluation criteria of readability, comprehensibility, clarity, and concision in determining the compliance level of a text.

The readability level quite literally verifies the reading ease of a text, and the comprehensibility level of a text refers to the reader’s understanding of it. Although clarity and concision are inter-related, clarity indicates the simplicity of the text and concision signifies its succinctness and brevity level. These criteria are observed from the reader’s point of view. Chinese speakers were asked to rate the compliance level of both Chinese source text and English translations, while English speakers were asked to only evaluate the English translations.

The levels of readability, comprehensibility, clarity, and concision of the Chinese text were reportedly higher than those of the English translation, and this included the values of mean, median, and range in the Chinese texts. Despite the fact that the compliance level of the Chinese text was higher than that of the English text, some evaluators pointed out that some of the Chinese texts contain long sentences with poor structural organisation. In addition, the use of terminology and punctuation hampered

understanding, and the redundant repetition of concepts and nouns further reduced the quality of the Chinese text.



**Figure 1. Differences in mean value between Chinese and English texts**

In comparison, the compliance criterion that received the highest rating in the Chinese source text was text comprehensibility, while the highest in the English translated text was concision, which suggests that the Chinese texts were more understandable to the readers, and the English texts were more succinct. Both Chinese and English texts shared common ground in their clarity level, whereas the ratings were both the lowest in the specific compliance category. The implication of the low clarity ratings in both texts is that there is a need to enhance the clarity of both Chinese and English texts.

Although the clarity levels of Chinese and English texts were both low, a statistically significant difference in clarity was found between the Chinese text and the English text. In other words, there were distinctive differences between the quality of the Chinese and English texts.

The overall results illustrate that both Chinese and English texts received an above average rating in complying with the client's standards, which

indicates the fulfilment of the standards in being easy to read, understandable, clear, and concise texts. Further analysis reveals that the quality of the Chinese text affected the English translation, and that the number of errors in a given text can affect the reader's perception of it.

#### **4.4 The effect of Chinese text quality on English translation**

In existing literature, a strong relationship is reported to exist between the source text and the translated text, and such a relationship is substantiated in this research, in that strong correlations were found to exist between the Chinese and the English overall compliance levels. This suggests that the source text quality had an influence on the target text quality, and implies that better translation qualities could be derived from source texts of better quality. This correlation is significant at the  $p=0.01$  level. Moreover, negative correlations between the English overall compliance level and the two major error categories indicate that the more errors there are in a text, the less acceptable it is to the reader, since more errors lower text readability, comprehensibility, clarity and, above all, concision.

Further studies of respective compliance criteria between Chinese and English texts also show significant correlations. Not only were the evaluation results of the Chinese text associated with the four compliance criteria in the Chinese text, but the Chinese text compliance results were also strongly related to the presentation of the English texts, in particular, the correlations between Chinese clarity level and English readability, comprehensibility, and clarity levels. Likewise, English comprehensibility levels were found to have significant correlations with Chinese readability, comprehensibility, and clarity levels.

It can be seen from the data that factors influencing the low clarity level in the English text included Chinese readability, comprehensibility, clarity, and concision. This finding is supported by the evaluators, who commented that sentence structure plays an important role in providing clear and simple context, and that adequate pauses and sentence breaks enhance text clarity. On the other hand, long sentence length impedes the reader's understanding of a text, particularly text clarity and concision.

As was also emphasised in the comments, the two factors of great impact

on the four compliance criteria in the English texts were sentence structure and the use of terminology. The evaluators mentioned that good sentence structure implies better text readability, comprehensibility, concision, and clarity and, in addition, the use of simple, precise, and understandable terminology with clear meaning can enhance English clarity, readability, comprehensibility, and concision. On the contrary, complicated terminology and abstruse words can impede readability and comprehensibility.

One evaluator mentioned losing the drift of the explanation and having to pause to consider the grammar instead, and another indicated that the use of jargon can contribute to syntactical and lexical errors. It was also suggested in the feedback that abbreviations could be used in both Chinese and English texts to make them more concise.

#### **4.5 The effect of errors on readers' perception of a text**

The four compliance criteria were used to determine readers' perception of patent abstract translations, and the error categories of meaning error and form error determine the quality of the text. Correlations were found between three main error categories, and factors which influence readers' perception of a text could be identified by means of such a correlation.

Of all the factors, the only factor that might have greater impact on the compliance criteria is lexis, and to a much lesser extent, syntax. The reason is that there was only 25% of compliance impressions based on the lexical error rate. Although according to statistics, lexical errors do not necessarily pose a threat to text quality, feedback from evaluators showed that sentence structure and terminological errors undermine text quality, and indicated that the more errors there are in a text, the less likely it is to comply with given standards.

All in all, the statistically significant correlation between the Chinese text quality and the English text quality denoted the interrelationships between the source text and the target text, in which source text quality predetermined target text quality.

### **5. Conclusion**

Patent translation quality from the perception of the reader could be summarised as follows. First of all, sentence length. Undoubtedly, short sentences were well-received by the evaluators, and the use of short sentences in either Chinese or English texts resulted in higher readability. In contrast, lengthy sentences were said to be one of the causes for poor ratings. In addition, varying sentence length in one single paragraph was believed to have a negative impact on the readers and sentences with unnecessary details undermine text quality. It is shown that the translated texts were more consistent in the use of short sentences than the Chinese source texts.

The second factor is lexis: there is no denying that the use of appropriate lexis and sparse use of jargon would help the readers' understanding of the text. A heavy information load with complicated word usage and difficult diction, on the contrary, hinders readers' understanding. The third factor is repetitions: throughout the text, repetitive use of words was common. Frequent repetitions such as noun phrases, ordinal numbers, quantifiers, and confusing terminology were believed to create confusion, and to make the description even more obscure. Despite the fact that the evaluators worked through the text individually, the results showed consensus from the majority of the evaluators in agreeing that syntactical structure and lexis were the two key factors in controlling text quality in patent translation.

From this research, the assessment of patent translation quality guides translators to provide acceptable translations. These findings suggest that translators should focus on succinctness, brevity, and concision, both in choice of lexis and in grammatical structures. The implications of my research findings in patent translation and for technical translation in general can be summarised as follows: the importance of Chinese source text quality, and the criteria for quality technical translation.

Despite the fact that the qualities of both source text and target text were rated as above standard in the research, the importance of source text quality should still be emphasised. The current practice in most patent offices is to examine only the translated text of patent documents, but from the implications of this study, it is recommended that source text quality be examined as well. To the lowest limit, source text quality should be included in the assessment of translated texts. The information on source text

quality and target text quality can be used as a reference for the translator, the applicant, and patent offices. This information can also serve as a yardstick for improvements. The ultimate goal is to benefit the readers and the users of patent information.

Evaluators' reactions to the corpus, combined with general observations made on the basis of readability studies, show the importance of concision in translation of patent abstracts in particular, and technical translation in general. On the whole, technical translators should avoid misusing terminology as it makes text unreadable. In addition to appropriate use of lexis, technical translators should also be encouraged to use short and simple sentence structures to conform to the compliance levels of readability, comprehensibility, concision, and clarity.

This study has gone some way towards establishing the concepts of quality and concrete realisations of standard and sub-standard language in the translation of patent abstracts. This method of analysis might be used in feeding back to translators, and could certainly be useful in the training of technical translators. If translators can be trained to be self-critical in the way they use lexis and structures, they may be in a position to develop an approach to translation which results in more accurate and reader-friendly target texts.

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