

Research Article

Evaluating the Quality of Engineering Translator Training Based on the DEA Model

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This paper adopts the DEA model to conduct in-depth research and analysis on the evaluation of the quality training of engineering English translation talents. The BIM application performance of nine engineering projects is empirically analyzed, including slack value analysis, correlation validity analysis, and BIM application performance path optimization. The nine cases have an unreasonable allocation of resources invested in BIM application in the early stage so that the performance path optimization is carried out to find out the key paths for the reallocation of resources. Further analysis of BIM application performance improvement strategies, including strengthening the training of BIM application professionals. The fuzzy two-stage DEA model with adjustable fuzzy opportunity constraint constructed for the situation where both intermediate and final processes have non-desired outputs. First, the additive efficiency decomposition model in the exact number environment is extended to the non-desired output situation. Second, the generalized fuzzy measure and opportunity constraint planning are applied to further extend the model to a non-expected output fuzzy DEA model, and a two-stage DEA model with adjustable fuzzy opportunity constraints is constructed. There are still some differences between the two. Strengthening practice is the general trend of current curriculum reform in our country. Finally, the proposed model is applied to the evaluation problem of quality training of engineering English translators. The adjustable fuzzy opportunity-constrained DEA model proposed in this paper can effectively evaluate the efficiency of real production and operation activities. The research results of this paper not only enrich the existing DEA model theoretical system but also have broad application prospects and values in practical problems. We provide a reasonable guarantee in terms of system and funding and pay attention to the follow-up communication with employers to strengthen the implementation of the influence of social forces on the quality evaluation of English teaching in higher education. To a certain extent, this study enriches the theoretical research on the quality evaluation of English translation talents' quality training and can play a role in strengthening and improving the quality evaluation of translation talents' quality training at the present stage.

1. Introduction

The progress of science and technology has simultaneously promoted the development of English for Special Purposes. Special-purpose English refers to English about a field, such as legal English, technical English, agricultural English, business English, etc. Engineering English is one of the special-purpose English (ESP), and its main function is to disseminate and promote scientific and technological knowledge in this field worldwide. Engineering English is analyzed and studied from the perspective of the interpretive school theory. Although the theory of the interpretive school

mostly used to guide the practice of interpretation, its translation idea of attaching importance to the communication of meaning in translation without adhering to the form of language is also a great guide in the practice of translation [1]. The theory of this school helps the author to be able to put aside the bondage of words and phrases in the translation process and pursue accurate translation based on understanding words and phrases. Engineering English translation is professional, straightforward, simple in language, and logical and requires clear and specific meanings of statements and strong operability; therefore, it is not a new idea to use the theory of the interpretation school to

guide engineering English translation. In terms of theory, the research on this topic can enrich the connotation of talent evaluation to a certain extent. At the same time, the education evaluation dimension can also be broadened to a relevant extent [2]. Due to the limitations of the observations themselves, our statistics are not yet able to demonstrate that translators have conducted translation quality assessments during the meaning assumption stage, the unformed translation stage, and the post-delivery stage of the translation process. At present, scholars in our country are devoted to introducing the results of the existing research experience in western countries and the application of these results to the evaluation of university education. In those research studies, the problem that the research objects are not clear enough also revealed; especially, the evaluation of talents of specific majors is very little. Through combing, we can easily find that the research subjects of these studies are also talent training units, education supervisory departments, teaching practice, etc. There is no research on quality evaluation systems in terms of necessary social demand, school-enterprise collaborative education, enterprise participation, student satisfaction, etc. Therefore, based on the research results of previous scholars, this topic enriches and improves its theoretical basis, expands the evaluation subjects from training units and management departments to a multi-perspective talent training quality evaluation system for schools, enterprises, students, and social needs, and provides new ideas for education evaluation [3].

Due to the scarcity of educational resources, the evaluation of educational performance can improve the efficiency of resource allocation under the existing educational resources. It reduces the waste of educational resources, i.e., same output, lower consumption, or high output, low consumption. In contrast, the current situation of higher education in China focuses more on quantity increase than quality improvement. Therefore, it is important and urgent to study the efficiency of higher education. Only through such efficiency assessment can we timely identify unreasonable problems in resource allocation, make timely adjustments and adjustments, and thus improve efficiency. In the process of establishing the BIM application performance index evaluation system, the balanced scorecard is used as the theoretical framework to expand the research field of the balanced scorecard method and further improve the performance evaluation theory. In addition, the data envelopment analysis method is used in the three-stage network DEA model for BIM application performance evaluation, which has been rapidly used and developed in the fields of banking, medical, environment, and supply chain since its introduction, but is relatively lacking in the construction field, is conducive to the further improvement of BIM evaluation theory [4]. The establishment of a performance evaluation system is conducive to the structure of the BIM application management body and capital investment allocation of construction enterprises, the training of BIM professionals, and the establishment of BIM-related standards. The conclusion of the study can provide reference and reference for construction enterprises to improve the performance of BIM application and help promote the

promotion and application of BIM in the construction industry, which will enhance the core competitiveness of construction enterprises and accelerate the speed of construction industry reform and realize the construction enterprise information construction. This part of the cost investment is mainly to stimulate the enthusiasm of the staff and avoid the loss of professional talents, and at the same time, it can attract other outstanding professionals to introduce into the project management, thereby improving the management level.

However, with the smooth development of the whole economy, the supply and demand relationship in the talent market has undergone significant changes, coupled with the increasing adjustment, and upgrading of the industrial structure, resulting in increasingly serious structural contradictions in the field of education, and there is a significant tendency of homogenization. Although China has been creating more employment opportunities, it still cannot alleviate the problem of difficult employment and low employment level of graduates, which fully demonstrates that the talent cultivation mechanism constructed by the current higher education is obviously out of line with the development needs of society. In particular, the shortage of innovative, application-oriented, and practical talents is due to the unsound cultivation mechanism of such talents, which leads to the low quality of cultivated and delivered talents and cannot meet the real demand for industrial restructuring and upgrading. In addition, despite the serious talent shortage problem faced by major enterprises, they have always been stagnant and have fully realized the importance of participating in school-enterprise cooperation, resulting in very limited cooperation targets that can be screened by major universities.

2. Related Works

Data Envelopment Analysis (DEA) has been applied and developed in many fields around the world and has become an effective method for the same type of inputs and for generating relative efficiencies in multiple production or non-production sectors. This method is based on single-objective linear programming, which maximizes the output within a defined set of production possibilities or fixed inputs, or fixes the output while minimizing the inputs [5]. The inverse of the maximum expansion ratio of its outputs or the minimum reduction rate of its inputs is defined as the relative efficiency of the decision unit. While the former is called output DEA, the latter is called in DEA. In terms of the selection of data envelope indicators, Moorkens et al. selected faculty salaries, fixed asset expenditures, and recurrent expenditures as input indicators, and the number of university graduates, graduate graduates, and government research grants as output indicators to inquire into the overall teaching efficiency of higher education [6]. At this stage, the average technical efficiency was 0.467, which did not reach the level where the effective value of technical efficiency was 1.00. In contrast, Correia et al. examined the overall operational efficiency of higher education with the percentage of faculty with doctoral degrees among all faculty, the student-

teacher ratio, the cost of education per student, the average student enrolment score, and the average tuition per student as five input indicators, and the student graduation rate and the first-year enrolment rate, which can indicate student satisfaction, as output indicators [7]. Papadimitriou used the DEA model to analyse the productivity of schools and concluded that the lack of competition crisis in schools is a possible reason for their lack of efficiency, and it pointed out that increasing the level of competition among schools is the top priority for the reform of the education management system. In terms of school efficiency, Papadimitriou et al. used a DEA model based on public goods and human capital theories [8]. The basic theories of cost investment and education effectiveness assessment in universities are discussed and analyzed.

The practical communicative purpose of engineering English translation determines that the translator should focus on the readers of the translated text and aim at achieving the reproduction of the meaning of the original text so that the translation can produce the same effect as the original text in the readers; thus, in the choice of strategy, the translator should try to present the readers with the language that conforms to the way of thinking and expression habits of the translated language readers [9]. In this paper, when analysing the translations, we take the target language receivers as the guide and focus on the complete expression of the meaning of the original text. The author believes that the translation of engineering English should follow three principles of accuracy, conciseness, and standardization [10]. First, language innovation is a difficult point faced by translators in translation, and translators should reasonably handle the balance between innovation and fidelity [11]. The theory of the interpretive school attaches great importance to the study of the translation process, focusing on the intermediate process of detaching from the language shell, believing that people in communication want to understand the information that the other party tries to express, which is the fundamental purpose of communication [12]. The translation is not a simple conversion of linguistic codes, but the transmission of meaning through interpretation.

The phenomenon of lexical shift is very common in English. In translation, lexical conversion is the method of switching from one lexical function to another. We all know that translation is never a mere conversion of word to word. According to the theory of interpretation, translation means "interpretation," and translators should not only pursue the equivalence of language units. The application of BIM in engineering projects was basically recognized by the project participants, but it did not reach a level that satisfies them. To translate conform to the norms of the translated language in the context of the translation, and to fully convey the original language information needed to achieve the intended function of the translation, it is usually necessary to make word-to-word conversions according to the linguistic characteristics of English. Translation quality self-assessment in this study, unless otherwise specified, includes not only the translator's quality assessment of the finished translation but also the translator's quality assessment

behaviour during the translation production process. In this study, translation quality self-assessment refers to the translator's judgment of the finished translation, the formed translation fragments, and the unformed translation in terms of rightness, goodness, and conformity to standards.

3. DEA Model Design for Quality Evaluation

Addressing the most important objectives and functions of the DEA model, the input-output efficiency can reflect the overall efficiency when the DMU is in a state of constant revenue. Technical efficiency can reflect the input-output efficiency of the assumed DMU in the state of optimal scale gain, while scale efficiency is a relative measure of the current state of DMU scale gain and optimal scale by analysing the comprehensive efficiency, the combination of technical efficiency and scale efficiency, the relative efficiency of DMUs of different scales can be identified to provide targeted suggestions for management decisions [13]. These values can reflect the degree of input-output deficiency or redundancy, and their role is mainly to help propose management strategies and guide decision-makers to make more accurate input-output corrections.

As the evaluation object of DEA, a decision-making unit (DMU) refers to an entity that converts certain inputs into certain outputs, which can be an organization such as a bank, hospital, or supermarket, or a separate individual such as an airplane, computer, or athlete. Therefore, the application of BIM there needs to be some innovation in the presentation of the effect. In addition, the DEA model requires that the DMUs are homogeneous, i.e., each DMU has the same objective, the same external environment, and the same input-output metrics. If the decision units do not satisfy the above conditions, some processing is required before the DEA model can be used for efficiency evaluation.

If the set of production possibilities satisfies the above four assumptions, then T can be expressed as

$$T = \left\{ (X, Y) \mid \sum_{i=1}^n \lambda_i X_i \geq X, \sum_{i=1}^n \lambda_i \leq Y, \lambda_i \leq 0 \right\}. \quad (1)$$

The CCR model is a DEA calculation model proposed by Charnels with the concept of engineering efficiency, which assumes constant payoffs of scale to measure the relative efficiency of decision units, and the efficiency value calculated by this model is called technical efficiency,

$$h_j = \frac{u_{ic}^2 Y_{ic}^2}{v_{ic}^2 X_{ic}^2}. \quad (2)$$

The above equation shows that the output value determines the production efficiency of the decision unit under the assumption of constant inputs. In addition, to evaluate the effectiveness of the decision unit using the above model, it is necessary to calculate the maximum efficiency index in the decision unit and use this value as the target, which constitutes a model expressed in fractional form as in equation (3),

$$(CCR) = \begin{cases} \min \frac{u_{ic}^2 Y_{ic}^2}{v_{ic}^2 X_{ic}^2} = h_i, \\ \frac{u_{ic}^2 Y_{ic}^2}{v_{ic}^2 X_{ic}^2} \geq 1, \quad i \in N, \\ u \leq 0, \quad v = -1, \\ u > 0, \quad v \neq -1. \end{cases} \quad (3)$$

The above model shows that the technical efficiency of DEA is determined by the output-to-input ratio, so the technical efficiency range is between 0 and 1, which means that the larger the technical efficiency value of a decision unit, the closer it is to the technical production level of the industry. In particular, the technical terminology mentioned above has always been a headache for many technical translators but cannot be avoided, all of which require translators to have a certain breadth and depth of professional knowledge. Since the performance evaluation is set by multiple factors and multiple aspects of performance, it needs to be weighted in the process of calculation, and there are two main ways to weight the data: The first one is to conduct a weighting process on the data through subjective ways such as communication and consultation with experts or literature review; the second one is to use data envelopment analysis to obtain input and output weights through the data itself [14]. The second one, which is to use data envelopment analysis to obtain input and output weights through the data itself, eliminates the influence of human factors on the data and makes the data more accurate.

The technical efficiency calculated by the DEA model is called "relative efficiency" because the evaluated object is obtained by comparing it with other evaluated objects through the mathematical planning method. Therefore, mathematical planning can be used to obtain an external effective production envelope consisting of each decision unit, and the frontier surface can include the observation points of the input/output values of the evaluated object, which is the reason that the DEA model is called data envelopment analysis. The decision unit corresponding to the point in the frontier surface is called a technically effective unit (or weak DEA effective unit) with an efficiency value of 1. Conversely, the decision unit corresponding to the point outside the frontier surface is called technically ineffective with an efficiency value less than 1. The frontier surface is used to find the location of the corresponding technically effective point, as shown in Figure 1.

The first stage refers to the learning and growth dimension as an input item and the internal operation process dimension as an output item [15]. In this stage, it mainly measures the technical personnel to use BIM to innovate and develop new management mode or apply practical techniques such as mode to help or assist the management activities of engineering projects and improve the efficiency

of engineering management, that is, this stage is called the transformation stage of BIM application results.

The second stage refers to the use of a new management model and technology, i.e., internal operation process dimension as input items, and whether it can improve the recognition of the owner or other participants, i.e., customer dimension as output items. The translation thought that does not stick to the form of language also has a great guiding role in the practice of translation. In this stage, the main measurement is whether BIM, as a new building information management model, has achieved the expected expectations for the participants. As BIM is promoted and used mainly by owners and other participants to promote the application and development of BIM in China's construction industry, that is, this stage is called the BIM application effect demonstration stage.

The third stage refers to the customer dimension as the input item and the financial dimension as the output item. This stage mainly refers to the overall performance effect of BIM application in the economic dimension under getting the owner's affirmation of BIM application in engineering projects, whether it can help engineering projects to reduce economic input, that is, this stage is called the BIM application economic benefit transformation stage.

Using the network DEA model to study the performance of BIM applications is of great significance. First, the network DEA model can identify the key index factors that affect BIM application in the evaluation system. Second, the network DEA model analyzes each index and finally optimizes the performance evaluation system. Third, the results of the efficiency value of each stage to find out the key indicators at that stage are significant for promoting the development of BIM application and the overall level of performance improvement,

$$\% P = \begin{cases} \max u_{ic}^2 Y_{ic}^2 = V h_i \\ W^T x_i + u^T y_{yj} \geq 1, \quad i \in N \\ u^T y_{yj} \leq 0, \quad v = -1 \\ W^T x_i > 0, \quad v \neq -1 \end{cases} \quad (4)$$

First, the efficiency values of each system cannot be calculated separately if it will lead to high-efficiency values and prompt distortion of data [16]. This school theory helps the author to put aside the constraints of words and sentences in the translation process and pursue accurate translation based on understanding words and sentences. Second, the research in this paper uses a tandem network DEA model, so it is not possible to add input terms or output terms to the system in the external environment, which will also lead to distortion of the data.

The design of any assessment index system has a corresponding direction to serve the social and economic needs. Before developing a reasonable assessment indicator system, we must have a clear assessment direction. On the other hand, if the basis of the research is different, the proposed assessment index system will also be different. Therefore, the direction of higher education performance assessment is to understand the performance of the higher education system and to clarify the causes of the differences in higher

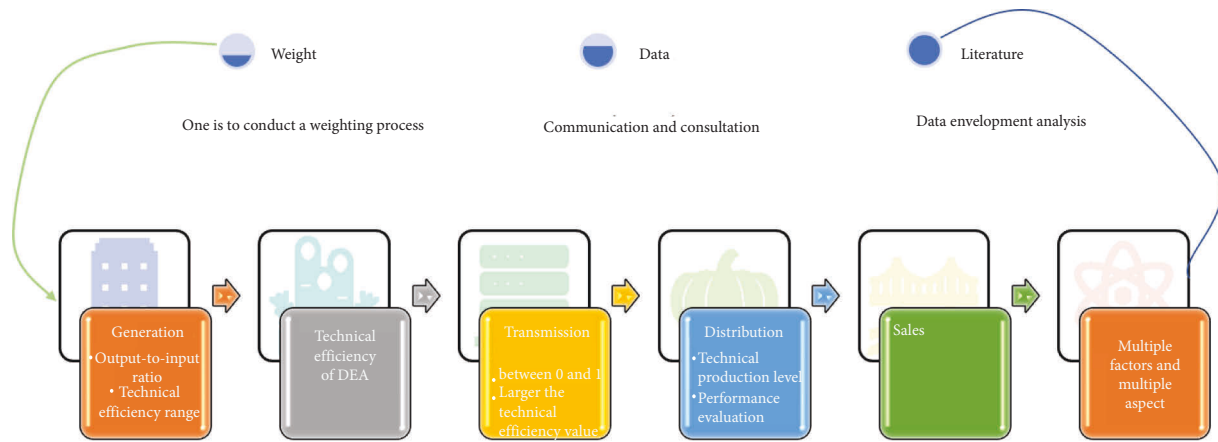


FIGURE 1: DEA model.

education performance in different places. The key is to improve the higher education system in regions with low supporting performance and to move in the right direction. Therefore, in the process of developing higher education performance assessment indicators, it is necessary to collect data with an eye to the direction of higher education performance assessment. The established system of performance evaluation indicators can fully reflect the purpose of higher education performance evaluation, as shown in Figure 2. There is no research on the quality evaluation system in terms of social necessary needs, school-enterprise collaborative education, corporate participation, and student satisfaction.

The design of the evaluation index system should be based on scientific research theories and combined with practical experience. First, an objective and scientific evaluation method should be found, and the evaluation index system constructed under the guidance of this method should reflect the real situation of the evaluated objects. The evaluation indexes in this evaluation index system should have clear and definite meanings and fully reflect the connotation and essence of higher education performance,

$$\lambda^2 = \frac{k \times \sum_{i=1}^k R_i^2 + \left(\sum_{i=1}^k R_i\right)^2}{n} \quad (5)$$

The development of evaluation indicators should form a hierarchy of all selected indicators and an intrinsic evaluation indicator system [17]. The education system is a special whole with several components, which are independent of each component, but inextricably linked with these sub-systems. First, it is necessary to establish the goal of the evaluation, i.e., the ultimate purpose of the evaluation, what problems are to be reflected, and what situation is to be responded to. Of course, it is necessary to reflect all relevant information about the object to be evaluated as much as possible. To improve objectivity, it is also necessary to select indicators from various levels and perspectives. The indicators and parameters of the evaluation index system should be stable and simple, and the reference values used to calculate the relative values of the indicators should not be changed. There are uniform standards for the statistical calibre and scope of application of each evaluation indicator.

On the other hand, how to provide a set of operable talent cultivation strategies is another major difficulty of this study. As we all know, talent cultivation is a systematic project for higher education institutions, and the strategy of talent cultivation involves various aspects such as talent cultivation concept, major setting mode, curriculum setting mode, teaching system, teaching organization form, hidden curriculum form, teaching management mode, and education evaluation mode. In the process of establishing the BIM application performance index evaluation system, the balanced scorecard is used as the theoretical framework to expand the research field of the balanced scorecard method and further improve the performance evaluation theory. Therefore, it is more important to systematically think about how to cultivate such people than to propose a talent cultivation goal that meets the actual needs of society. Global governance talents are not a kind of purely professional talents, that is, they cannot be cultivated only by the professional education mode of the present universities.

4. Design of Quality Evaluation of Quality Cultivation of Engineering English Translation Talents

Safari believes that the main task of process evaluation is to document the real process of project implementation to provide the implementer with real information about the implementation of the program. The process of program implementation is documented to check whether the activities of the implementation phase are carried out according to the predetermined design, as well as to detect how well the program is carried out during implementation. The pre-designed activity plan may have some flaws. By documenting the process to reflect the real situation, the process evaluation implementation process allows further modification and improvement of the program design based on the actual situation of the implementation process. Process evaluation in essence belongs to formative assessment finally [18]. The process of cooperation between schools and enterprises is to put the design of the training program into real action, integrate the relevant resources of

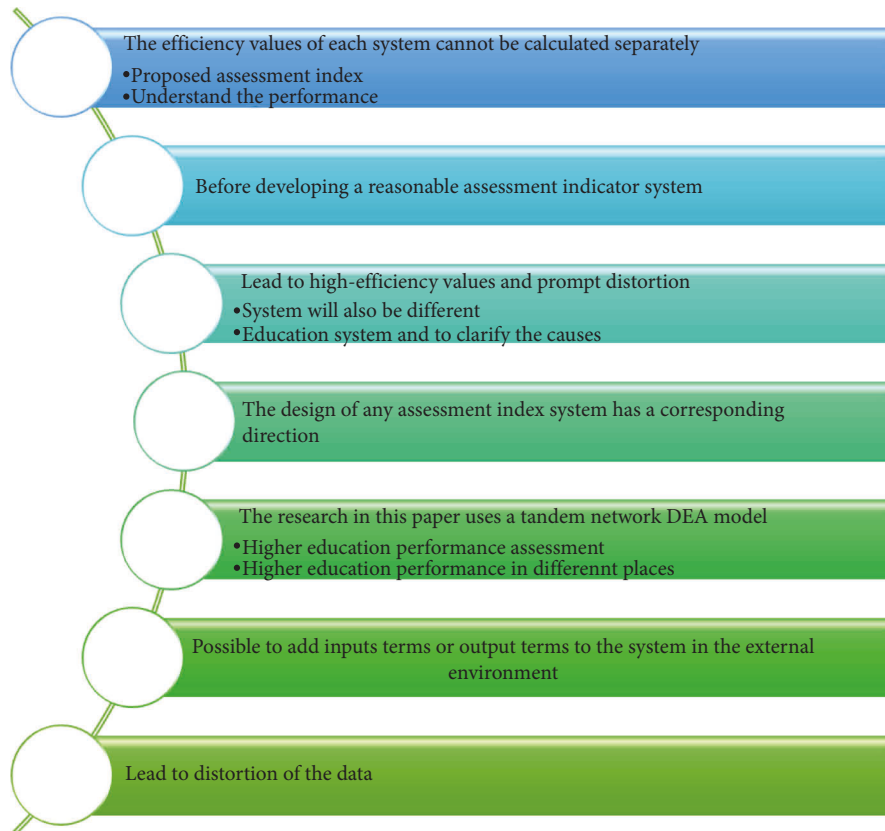


FIGURE 2: Steps of quality evaluation.

schools and enterprises, and carry out practical teaching of relevant courses under the constraints of the established system. In the process evaluation, “resource utilization,” “curriculum implementation,” and “system of implementation” are used as secondary indicators.

Although both process evaluation and input evaluation examine the integration and utilization of resources, input evaluation examines the design of resources, while process evaluation mainly examines the use of resources in the training process, and there are some differences between them. Reinforcing practicality is the current trend of curriculum reform in China. Strengthen the connection between course content and students’ future career development, and take practice orientation as the curriculum reform concept. Incorporate the current frontier of subject knowledge and excellent enterprise practice cases into the course content of school-enterprise cooperation talent training. This has led to increasingly serious structural contradictions in the field of education, and there is a significant tendency to homogenize. Adjust the course content timely according to the development of innovative technology and the demand of society for talents to lay a good foundation for students to adapt to society in the future. Innovative knowledge and the latest research results lead the direction of current professional development, and the process of course content development requires the implementer to have a keen insight to ensure that the most innovative knowledge and the latest research results can be

provided to students [19]. Therefore, in the course content, “the frontier of professional subject knowledge and the latest research results of professional research” is set as an observation point.

The most important part of the hierarchical analysis is the construction of a hierarchical structure and the identification of the elements of each level. The DEA model also requires that the decision-making units are homogeneous, that is, each decision-making unit has the same target task, the same external environment, and the same input-output indicators. According to the above research results, the index system of talent training quality evaluation of school-enterprise cooperation in Dingle College of Hubei Normal University has been derived, and the interrelationship of each index has been sorted out. From the graphical structure, the next layer of evaluation indexes is all subordinate to the previous layer, and each subsystem of each layer is independent of each other without any connection, as shown in Figure 3.

The above statistical results tentatively prove that professional translators do conduct translation quality assessment at corresponding stages of the translation process and tentatively prove that translators’ translation quality assessment behaviours run through multiple stages of the translation process. This provides practical data to support the shift of translation quality assessment research from focusing only on the translation quality assessment of final drafts to the study of both final drafts and translation quality

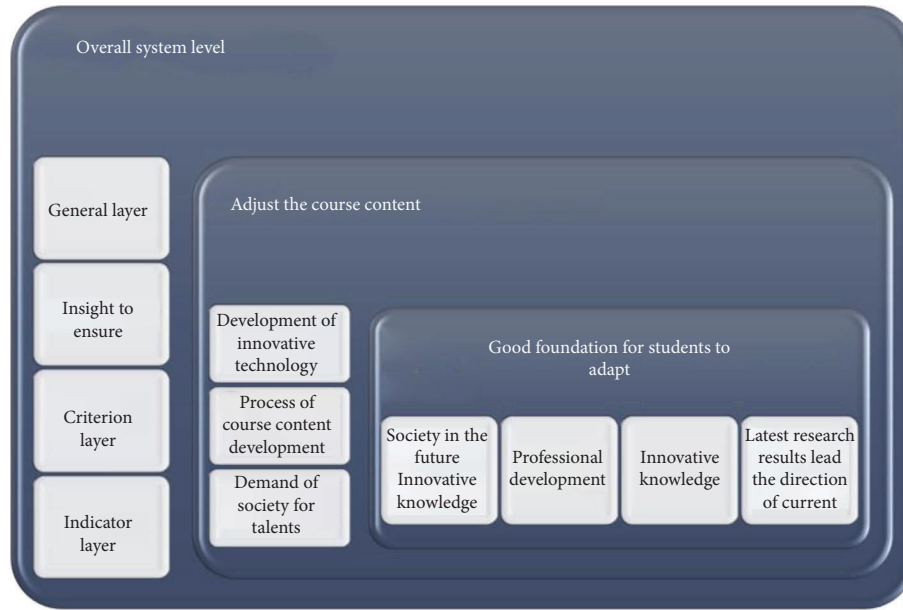


FIGURE 3: Hierarchical structure model of the talent quality training evaluation system.

assessment in the translation process. The data is weighted by subjective methods such as communicating with experts or consulting literature; the second is to use the data envelopment analysis method to obtain the input and output weights through the data itself, and eliminate the influence of human factors on the data, so that the data is more precise. However, as we said earlier, due to the limitations of the observation itself, our statistics cannot yet prove that translators conducted translation quality assessment at the meaning assumption stage, the unformed translation stage, and the post-delivery stage of the translation process. Validation of the relevant content will need to be further verified by subsequent prompt-based retrospective oral report analysis of the data.

For operational purposes, we used the evaluation objects listed in the questionnaire as observation points, specifically observed the professional translators' changes in translation expression, terminology, vocabulary and sentence patterns, changed the translation to make the meaning more accurate, changed the translation purpose to achieve the translation purpose, and changed grammar, spelling, sentence reading, and symbols. The reason for the addition of other content items is that they are not included in the translation. The reason for adding other content items is that the evaluation contents and objects we designed in the questionnaire may not fully reflect the contents and objects of translation quality evaluation conducted by professional translators in the actual translation process, as shown in Figure 4.

Studying the translation quality assessment criteria of professional translators with this method is indirect research. Further verification of the inference will be accomplished by subsequent analysis of the retrospective interview reports based on prompts. Moreover, this kind of inference based on revision behaviour does not fully reflect all the criteria on which the specific assessment behaviour of professional translators is based [20]. The translation quality

self-assessment done by professional translators during the translation process is not always reflected in the final revision action, but there are many translation quality self-assessments beyond each revision action. Since some of the translation quality self-assessments reflect the translator's affirmation of an existing translation, what we see through the act of revision is only part of the translation quality self-assessment. In addition, as mentioned earlier, professional translators' translation quality assessment behaviours may also occur at the meaning assumption stage when the translation is not yet presented on the screen and at the unformed translation stage, which cannot be captured in the video-based observation of the recorded screen.

5. Results and Analysis

5.1. Performance Analysis of DEA Model for Quality Evaluation

5.1.1. DEA Equipment Purchase Cost. DEA equipment is the material basis that can help DEA application personnel to carry out DEA application activities. The use of basic equipment such as high configuration computers, mobile electronic devices, and professional software can improve the intensity of DEA application personnel to manage engineering projects and to better reflect DEA management ideas in actual engineering projects.

5.1.2. DEA Management Construction Cost. BBM management construction refers to personnel management and DEA application centre construction. Personnel management includes DEA application staff salary, reward and punishment system construction, and technical training costs; this part of the cost investment is mainly to motivate personnel to work and avoid the loss of professional talent, and at the same time can attract other excellent professional

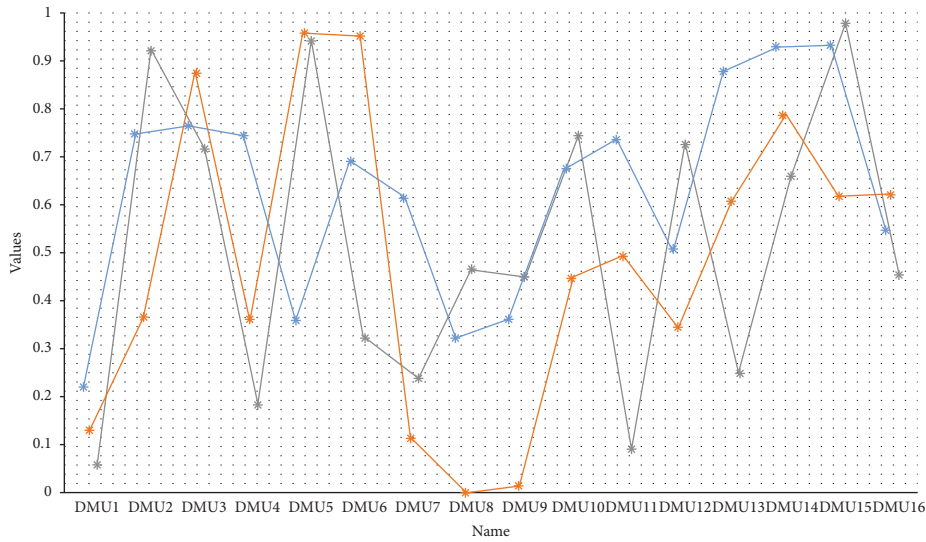


FIGURE 4: Input and output data.

talent into the project management, to improve the management level. DEA application centre construction refers to DEA application staff office environment construction and office space construction, which is the centre of management and coordination of the entire project.

5.1.3. Material Management Efficiency Improvement Rate. It refers to the use of DEA based on 4D schedule simulation and 5D cost simulation for reasonable planning of material entry plan, reducing unnecessary workforce consumption and financial waste. Therefore, this index represents the percentage of time and money saved by using DEA to the time and money consumed by not using DEA, which is the rate of improvement of material management efficiency.

Since the promotion and use of BIM is mainly driven by the owner and other participants to promote the application and development of BIM in the construction industry, this stage is called the BIM application effect display stage. Contract data management efficiency improvement rate: It refers to the chaotic phenomenon of making, storing, and retrieving the data and related contract management of construction projects in construction enterprises, which usually means that the on-site engineering component work has been completed, but the related materials have not been made yet; after applying DEA, the related contracts and data of construction projects can be associated with the DEA data platform, and they can be grouped and organized according to the rules and regulations to facilitate. The ratio of the time saved after DEA application to the original plan is the efficiency improvement rate of contract information management, as shown in Figure 5.

Next, the technical efficiency value from each stage is analyzed in stages. The first stage refers to the transformation stage of BIM application results: The highest conversion rate is 0.939 for project 4, which indicates that the BIM application personnel of this project actively innovate and reform the application of BIM in engineering projects to realize the

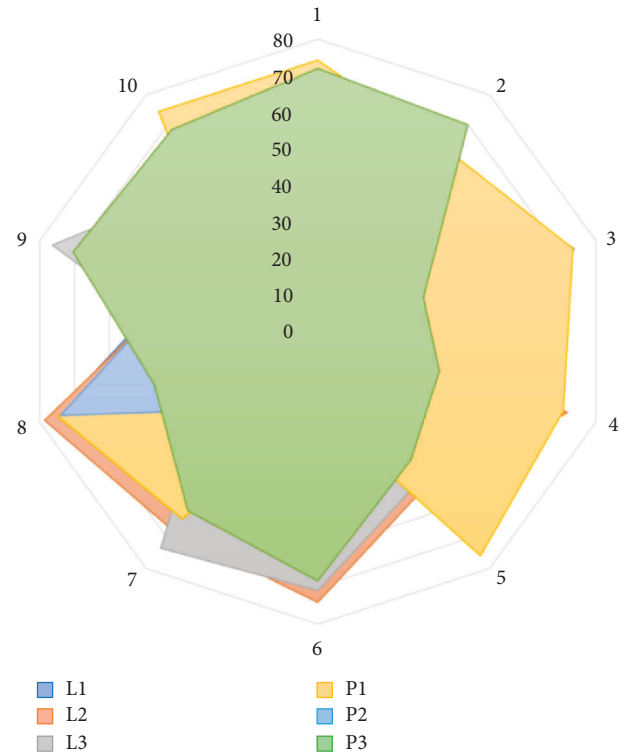


FIGURE 5: DEA model indicators by stage.

transformation of BIM theory to BIM application results, while the efficiency values of project 5, project 7, project 8, and project 9 are 0.083, 0.050, 0.075, and 0.045, respectively, are less than 0.2, so the conversion rate of these projects at this stage is not high, indicating that the combination of BIM and the actual effect is not good, and it is necessary to improve the way and method of BIM application to improve the combination of BIM and the actual engineering items if not improve will greatly limit the future development of BM and the promotion of the use in engineering projects.

The second stage refers to the BIM application effect display stage: The average value of technical efficiency in this stage is 0.467, which does not reach the level of technical efficiency effective value of 1.00. The application of BIM in engineering projects is recognized by the project participants, but it does not reach the level of their satisfaction, so the BIM application needs to be innovative in the effect display.

The global core values that global governance talents need to possess are the elements of values that they can uphold when they participate in global governance activities and permeate them in the negotiation process of global affairs, which can be used as the basis to obtain a consensus among multiple parties and finally condense into an effective global governance program, as shown in Figure 6.

In the process of translation quality assessment, professional translators resorted to translation language competence at least 6 times and at most 50 times, with an average of 27.1 times; source language competence at least 6 times and at most 46 times, with an average of 24.4 times; translation knowledge at least 4 times and at most 27 times, with an average of 15.6 times; and instrumental competence at least 1 time and at most 19 times, with an average of 11.4 times. The minimum number of times to resort to extra-linguistic ability is 2, the maximum number of times is 15, and the average number of times is 7.5.

The study on the internal resources used by professional translators in the process of translation quality assessment tentatively confirms that professional translators' translation quality assessment requires the use of bilingualism, translation knowledge, instrumental competence, and extra-linguistic competence, which overlap with the composition of translation competence. This indicates that translation competence and translation quality assessment competence overlap to some extent, thus confirming the correlation between translation quality assessment competence and translation competence.

6. Evaluation Results of Quality Training of Engineering English Translators

When the decision-maker sets the adjustable parameter to 1, which means using the possibility measure, the efficiency evaluation results obtained by Jolly Puri's method and the method proposed in this chapter are the same, as shown in Table 1. The indicators and parameters of the evaluation index system should be stable and concise, and the reference values used to calculate the relative values of the indicators should not be changed. This shows the effectiveness of the proposed method in this paper. Furthermore, we can get more efficient evaluation results by adjusting different adjustable parameters so that we can get more information to provide better support for decision-makers to make reasonable decisions, which illustrates the superiority of the proposed method.

This paper discusses the translation strategy of engineering English from the perspective of interpretive theory by analysing and researching engineering science and

technology texts. Engineering English is highly professional, objective, and rigorous and aims to convey information, and these characteristics ultimately reflect that the translation of this genre should be based on the translation customer and present the readers with objective, accurate, and concise language, following the expectations accepted by the translation audience. This emphasis on the readers' reflection is like the interpretation theory which emphasizes that the task of translation is to convey the communicative meaning and that the translator should "understand the original language, detach from the original language shell, and express the understood content and emotion in another language." Because of this, this paper takes the interpretation theory as the theoretical guiding framework, and in the selection of translation strategies, we should try to stand in the position of readers and present them with accurate, simple, and standardized language as much as possible.

At the level of vocabulary, engineering English is strict and professional, and the terminology is "single," but in different fields, it is "multiple meanings," so the translation work can be done only when the original text is accurately understood. In addition, with the continuous development of science and technology, there are increasingly new terms and abbreviations. When translating words, we should strive to "believe" and make them conform to the norms to avoid the inauthentic and unnatural language from destroying the credibility, rigor, and readers' sense of reading identity of engineering science and technology style.

On the syntactic level, the civil engineering style is concise, objective, precise, and focused; in addition, passive sentences and noun words are used a lot to make statements objective. Civil engineering English is a morphological language, mostly compound or parallel sentences, with many non-finite verbs, postpositions, definite clauses, sentence structures caused by the pronoun *it* and so on, and a subject-predicate structure forming the backbone of the sentence. Chinese, on the other hand, emphasizes meaningful agreement, and there may be multiple clauses in a sentence, with no obvious means of articulation between the clauses. Therefore, in the English-Chinese translation, it is necessary to adjust the translation to the respective characteristics, as shown in Figure 7.

In response to the characteristics of civil engineering English, the thesis explores the translation strategies and methods of civil engineering English. The thesis discusses translation strategies and methods such as phonetic translation, zero translation, synthesis method, word addition, provincial translation, lexical conversion, and word order adjustment and illustrates them with specific cases. There is a unified standard for the statistical calibre and scope of application of each evaluation indicator. Civil engineering English is designed to express and convey information; therefore, the author believes that the translator should try to present the information of the original language to the readers of the translated language in accurate, concise, and standardized language.

After translating, collecting, and analysing English translation materials for civil engineering, the author deeply feels that it is not an easy task to translate civil engineering

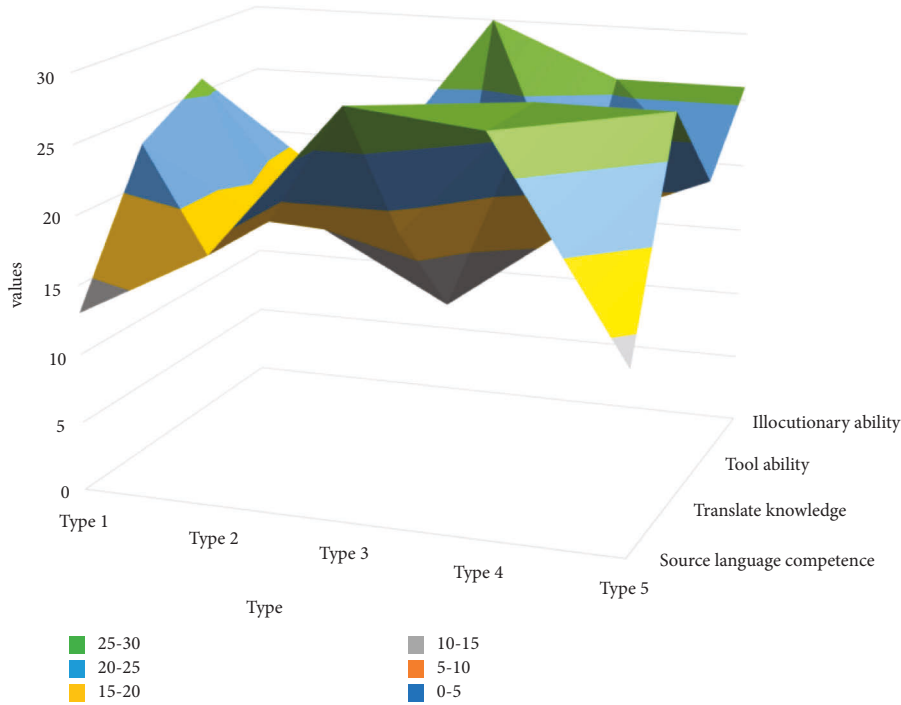


FIGURE 6: Usage statistics.

TABLE 1: Efficiency values of DMUs at different confidence levels when the adjustable parameters are 0.

DMUs	Confidence level				
	0.6	0.7	0.8	0.9	1.0
DMU 1	0.317	0.424	0.367	0.547	0.362
DMU 2	0.461	0.458	0.47	0.368	0.559
DMU 3	0.548	0.452	0.356	0.441	0.387
DMU 4	0.583	0.516	0.493	0.498	0.405
DMU 5	0.34	0.319	0.493	0.501	0.522
DMU 6	0.462	0.354	0.569	0.467	0.565
DMU 7	0.531	0.438	0.36	0.412	0.451
DMU 8	0.411	0.586	0.493	0.318	0.574
DMU 9	0.549	0.356	0.456	0.317	0.535
DMU 10	0.522	0.537	0.591	0.541	0.406

English well. It requires a strong reserve of scientific and technical knowledge. Without the accumulation of technical knowledge in specialized fields, the translated materials are likely to be inappropriate, as the saying goes, “a line of work is like a mountain,” especially the terminology pointed out earlier, which has always been a headache for many scientific and technical translators but cannot be avoided, all of which require translators to have a certain breadth and depth of professional knowledge. The translator is required to be able to convert freely between two languages and have a logical sense of both Chinese and English and a sensitivity to words.

7. Conclusion

A fuzzy two-stage DEA-UO model with adjustable fuzzy chance constraints is constructed for the situation where both intermediate and final processes have undesired outputs. First, considering the existence of non-desired outputs, the additive efficiency decomposition model in the exact number environment is extended to the non-desired output case by giving negative weights to non-desired outputs. The theory helps to guide the study of English translation in civil engineering and affects translators’ specific translation behaviours, such as the choice of translation strategies and methods, the determination of translation standards, etc. In addition to getting the guidance of the theory, translators should diligently pursue to improve their translation ability and translation quality. In the translation process, make good use of web tools. The adjustable fuzzy chance constraint is used to deal with the uncertainty in the model, and an adjustable fuzzy DEA model with the existence of non-expected output is constructed, followed by proof for the case of adjustable parameters and a confidence level of 0 in

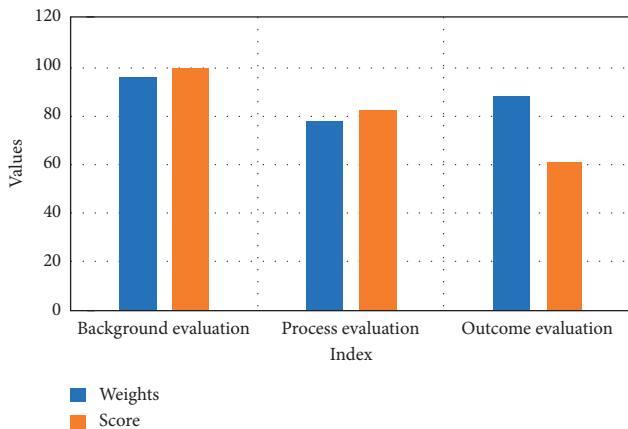


FIGURE 7: Evaluation results.

the model. Finally, the practicality of the proposed method is illustrated by the example of a barley farm. The web information is updated quickly and easy to use. In addition to using web resources to determine the meaning of words, translators can also use it to test the merits of various translations. Some new words do not have a uniform fixed translation for some time, in which case the frequency and authority of various translations can be compared. After all, translation is an endless work, and diligent checking of tools is a basic requirement for translators.

Data Availability

The data used to support the findings of this study can be obtained from the author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest or personal relationships that could have appeared to influence the work reported in this study.

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