Advances in Social Science, Education and Humanities Research, volume 610
Proceedings of the 7th Annual International Conference on Social Science and Contemporary Humanity Development (SSCHD 2021)

Development of a Model for Assessing the Quality of Translation Services: A SERVQUAL Approach

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ABSTRACT
The quality of translation services is highly relevant to the implementation of China's national development strategies. Quality management (QM) has become the core competence of translation services organizations to improve customer satisfaction, increase sales volumes and revenue, reduce risks, and expand market shares. Translation services are divided into three leading processes, namely, translation service provision process, management process, and support process. Then a process-based and customer-focused quality management system (QMS) is established following the requirements of ISO 9001:2015 on quality management. A quality service evaluation model, which consists of five dimensions and 22 items, is developed for translation firms using the SERVQUAL approach. The methods based on analytic hierarchy analysis are presented for calculating the relative weights of each evaluation components in the model. This study provides methods to construct an efficient QMS and effective evaluation model to measure the firm's performance in service quality, in the hope that it can help improve the quality of translation services.

Keywords: *Service quality assessment, Quality management, Translation services, SERVQUAL model.*

1. INTRODUCTION

The quality of translation services is highly relevant to the implementation of China's national development strategies because translation services play a significant role in facilitating the delivery of such strategies as the Belt and Road Initiative, going global of Chinese culture, and businesses, etc. In a highly competitive environment, customer needs are changing rapidly, and uncertainty, unpredictability and potential risks are increasing, the survival of translation services enterprises is greatly challenged. With the rapid technological development and the outbreak of the Covid-19 pandemic, many translation services firm, which were facing such problems as severe homogenization of products and lack of core competitiveness, now have to rise up to a more severe and chaotic competitive situation.

Management of quality has become a crucial means for the organizations to respond and adapt to these challenges, because quality is not only the core competence of translation services organizations, but also a necessary condition for their survival. Higher quality enables the organizations to improve customer satisfaction, increase sales volumes and revenue, reduce risks, and expand market shares. At the same time, continuous improvement of service quality within a translation services organization can effectively update the organization's operational practices while being efficient and flexible, enhancing the organization's competitiveness in a dynamic environment.

2. LITERATURE REVIEW

Quality is the "persistent pursuit of goodness coupled tightly with a simultaneous relentless avoidance of badness" and managing for quality means "a set of universal methods that any organization, a business, an agency, a university, or a hospital, can use to attain superior results by designing, continuously improving, and ensuring that all products, services, and processes meet customer and stakeholder needs."[1] Managing quality of translation services covered in this paper refers to a set of methods for translation services organizations to optimize their translation products, services, and processes in order to meet the needs of their customers and stakeholders.

Since the late 1980s, scholars both in China and overseas have conducted rich research on management of qualities and firm performance. Recently, researchers have generally used performance of management for quality and business performance as two important dimensions to measure firm performance, and a

combination of other indicators is also used to conduct a comprehensive and extensive study of practices of management for quality. In recent years, Bhatia, M. S. et al [2], Tomic, B. et al [3], Saleh, R. A. et al [4], Pambreni, Y. et al[5], Alonso-Almeida M. M. et al[6], Feng, S. B., and Chen, L. Q.[7] have approached the role of management for quality in improving firm performance from different perspectives and using different research methods in terms of different industries. These studies showed that the quality performance of firms was significantly improved thanks to quality management, which further enhanced the financial performance and market share of firms.

The existing research on translation services quality is mainly focusing on translation quality assessment and translation quality measurement criteria at the theoretical level from linguistic perspectives. Scholars such as House J. [8], Reiss K. [9] Williams M. [10], and others scholars have proposed translation quality assessment models, translation project management and translation quality control. Drugan, J. [11] proposed top-down and bottom-up translation quality management models based on the current development of the translation industry. Hönig, H. G. [12], Chriss, R. [13], and others explored the importance of translation quality assessment methods from the viewpoint of the needs of translation industry. However, there is limited or even scarce research on management for quality of translation services using the approaches of management science. This paper aims to develop a quality management (QM) system and an assessment model to measure service quality (SQ) of translation services firms by using the SERVQUAL approach.

3. DEVELOPING A MODEL FOR SQ ASSESSMENT FOR TRANSLATION SERVICES

3.1. Devising a Quality Management System for Translation Services

3.1.1. Principles

Quality management of translation services consists of two aspects: the quality management of the translation product, and the management of the quality of the services associated with the production of the translation product. The translation product is the result of translation, which means “set of processes to render source language content into target language content in written form” [14][1], and translation service refers to “the intangible product resulting from the interaction between the client and the translation service provider.”[14] [2]. Translation service quality refers to the extent to which the translation product and related services meet the requirements of the customer or interested party. Translation service quality management refers to the coordinated activities of directing and controlling the translation organization in terms of the quality of translation products and related services.

Translation services organizations should establish quality management system (QMS) that meet international standards, domestic standards, sectoral standards and other standards according to the types of products and customer groups.

First, the seven principles identified in ISO 9001: 2015 A Complete Guide to Quality Management Systems [15] should be strictly followed, namely, customer focus, leadership, full participation, process approach, evidence-based decision-making, improvement, and relationship management. All of these principles should be implemented when a quality management system for translation services organizations is constructed, for quality control and examination within the organization.

Second, the establishment of a QMS for translation services shall be based on a process approach. Process is a set of interrelated or interacting activities that transform inputs into outputs, and any activity or set of activities that uses resources to transform inputs into outputs can be considered a process. The inputs are the requirements and the outputs are the results; the purpose of a process is to transform the inputs into outputs.

3.1.2. A Process-based QMS for Translation Services

Translation services can be divided into three leading processes, namely, translation service provision process, management process, and support process, and each leading process is broken down into several major sub-processes which consist of several minor sub-processes, as shown in Figure 1. These processes constitute the core competence of the translation services organization and are also the prerequisite for effective quality management of the organization.

Figure 1 illustrates a QM system based on the process approach in which the management processes and support process are closely related to the translation service provision process and shows the sequence and relationship among the leading processes and major sub-processes. The inputs and outputs of the whole system reflect the quality management principle of “customer focus” advocated by ISO 9001: 2015 [15].

3.2. A MODEL FOR ASSESSING TRANSLATION SERVICES USING SERVQUAL APPROACH

3.2.1. Evaluation Dimensions and Items

SERVQUAL, which was developed by Parasuraman, Zeithaml and Berry [16] and was founded on the view that the customer's assessment of service quality (SQ) is paramount, provides an instrument for measuring and managing service quality. It aims to measure the gap between what the customer expects by way of SQ from a service provider and their evaluations of the performance of a particular service provider.

The model promulgated five dimensions and 22 items to measure SQ:

1) Tangibility: The appearance of physical facilities, equipment, personnel and communication materials.

2) Reliability: The ability to reliably and accurately perform the promised service.

3) Responsiveness: The willingness to help customers and provide prompt service.

4) Assurance: The knowledge, courtesy, and ability of employees to express confidence and trust.

5) Empathy: The provision of caring and individualized service to the client.

In this study, to construct an evaluation model for QM for translation services, the evaluation dimensions and items are selected in accordance with the QM measures suitable for translation services firms by appropriately modifying the formulation of SERVQUAL model. The dimensions used to assess SQ in translation services and the corresponding items under each dimension are shown in Table 1. The calculation formula of the model is:

$$\mathrm{SQ} = \sum_{k=1}^{22}(P_k - E_k) \quad (1),$$

where SQ refers to the perceived service quality, P_k is the score of the k factor perceived by the customer, and E_k is the score of the k factor expected by the customer (k=1,2,3,…, n, n=22). In the above equation, SQ is the total perceived quality of a single customer under the condition that the weights of the five dimensions and 22 indicators are the same.

In the practice of service quality management in the real world, different customers have different views on the importance of each dimension, so it is necessary to determine the weight of each dimension and then arrive at a more reasonable SERVQUAL score by weighted average.

The weight of each dimension i relative to the total score SQ is denoted as w_i^1, and the weight of each item j under dimension i (j=1,2,..., n_i) relative to that dimension is w_{ij}^2 (j=1,2,..., n_i), then

$$\mathrm{SQ} = \sum_{i=1}^{5} w_i^1 \sum_{j=1}^{n_i} w_{ij}^2 (P_{ij} - E_{ij}) \quad (2)$$

The direct weight of a single factor $(P_{ij} - E_{ij})$ on the total score SQ is: $w_i = w_i^1 w_{ij}^2$. The SQ score at this point is then divided by the number of factors n(n=22) to obtain the average SERVQUAL score for a single customer.

Assuming that there are m customers, the SERVQUAL score $\mathrm{SQ}(s)$ for each customer s ($s = 1, 2, \ldots, m$) is obtained according to the above method. Finally, the SERVQUAL scores $\mathrm{SQ}(s)$ for all m customers in the survey are added together and divided by the number of customers m to obtain the average translation quality services score of a translation services company:

$$\mathrm{SQ} = (\sum_{s=1}^{m} SQ(s))/m \quad (3)$$

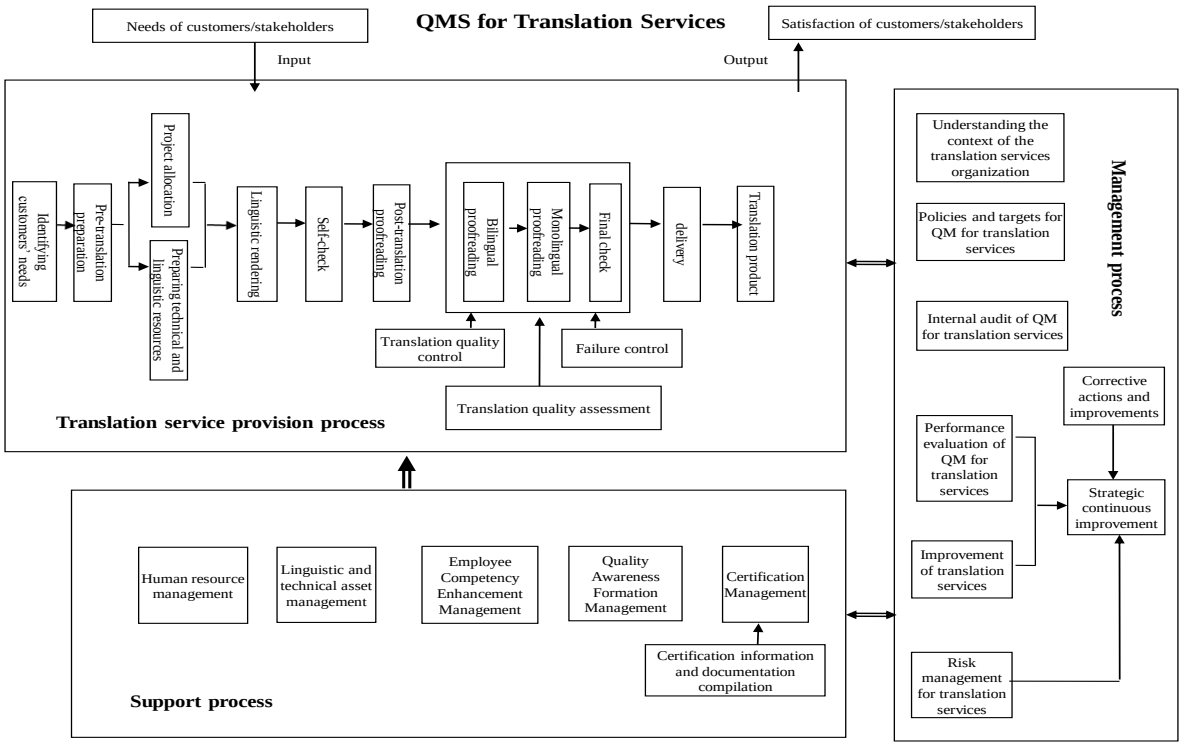

Figure 1 Processes of the quality management system for translation services

Table 1. SERVQUAL evaluation model for translation service quality

Dimension i	**Item** j	**Component** $< i,j >$	**Corresponding Questions** $< i,j >$
Tangibility $i = 1$	1	1.The company has modern facilities	Q1: The company has modern facilities and translation tools,
	2	2. The company is big	Q2: The company has undertaken large-scale translation
	3	3. The employees' dress is neat.	Q3: Service personnel are well-dressed.
	4	4. The service-related facilities are attractive.	Q4: The service facilities are comfortable,.
Reliability $i = 2$	1	1. The promises to customers are fulfilled within the time limit.	Q5: The work can be finished within the promised time.
	2	2. The employees are ready to help solve the difficulties encountered by customers.,	Q6: When clients encounter problems, the service personnel are enthusiastic to help them solve them.
	3	3. The company can provide satisfying service the first time.	Q7: The company can do the job well the first time.
	4	4. The company can complete the service within the agreed time.	Q8: The company is able to deliver the product within the agreed time frame.
	5	5. The company can keep an error-free record.	Q9: The company is able to document the service correctly.
Responsiveness $i = 3$	1	1. The company can tell the customer when to start the service.	Q10: The company is able to inform the client of the exact time when the service will be provided.
	2	2. The company's employees can provide appropriate services to customers.	Q11: The company is able to provide appropriate services at pre- translation, during- translation and post-translation stages.
	3	3. The company's employees are always ready to help customers.	Q12: Service personnel are always willing to help the client.
	4	4. The employees are too busy to ignore the needs of customers.	Q13: Service personnel respond to clients' requests in a timely manner, even when they are busy.

Assurance $i = 4$	1	1. The behavior of the employees makes customers feel trustful.	Q14: The services of the company are reliable.
	2	2. The customer feels safe to trade with the company	Q15: The company's service makes customers feel at ease.
	3	3. The employees always treat customers politely.	Q16: Service personnel are always polite to customers.
	4	4. The employees are professional in answering customers' questions.	Q17: Service personnel are skilled and experienced.
	5	5. The company is able to respond quickly when to the customer's feedback.	Q18: The company attaches great importance to customer feedback.
	6	6. The company can make timely corrections to customer complaints.	Q19: Companies are able to take appropriate remedial measures in a timely manner.
Empathy $i = 5$	1	1. The company can give special attention to customers.	Q20: Companies take care of the different needs of different customers.
	2	2. The company can provide flexible transaction time to customers.	Q21: The company can adjust the service time according to the needs of customers.
	3	3. The company can attach great importance to customers' interests.	Q22: The company puts the customer's interests first.

In the above SQ scoring model, the weights w_i, w_i^1, w_{ij}^2 are important factors that affect the final value of the score, reflecting the perception of the client and the evaluation agency about the importance of the above 22 items, but the weights of each item are not given. Analytical hierarchy process will be used to determine the weights of these 22 items in the following section.

3.2.2. Determining the Dimension Weights Using Analytic Hierarchy Process

The AHP is a widely employed structured technique for organizing and analysing complex decisions. It provides a way to determine the weight contribution of lower-level indicators to higher-level indicators, and the weight of higher-level indicators to decision goals, by comparing the relative importance of lower-level indicators over higher-level indicators, or higher-level indicators over decision objectives, in a decision-making oriented a multi-level system.

Five steps are adopted in this study to determine the weights of the items in the evaluation model for SQ in translation services organizations.

1) Establishing a multi-level assessment structure and index system. The SERVQUAL evaluation model for QS in translation services is a multi-level assessment system, as shown in Figure 2.

Firstly, for the assessment objective I, multiple dimensions affecting the assessment objective (assuming there are m_1 dimensions) are analyzed from top to bottom to form the first layer of assessment items$I_1^1, I_2^1, \dots, I_{m_1}^1$.

Then, for each first-level itemI_i^1, the factors affecting these indicators are then analysed to form a second-level item I_{ij}^2relative to the item I_i^1, assuming the number of I_{ij}^2 is m_i^2, then$1 \le j \le m_i^2$. In this way is a multi-level evaluation system established.

2) Constructing the comparison matrix of assessment items. The method is illustrated by taking the assessment of the overall objective I and its direct subordinate items as an example. Other non-bottom-level assessment items and the weights of direct subordinate items under this indicator are calculated in a similar way.

For assessing the m direct subordinate items of the overall objective I, $1 \le \mathrm{i} \le \mathrm{m}$, compare the impacts of any two subordinate items on $\mathrm{I}_\mathrm{i}^1\mathrm{I}\_$ and that of $\mathrm{I}_\mathrm{i}^1\mathrm{I}$ on objective I, and construct a comparative judgment matrix of order m × m for objective I with reference to Table 2:

$$(I) = [c_{ij}]_{m\times m} = \begin{pmatrix} c_{11} & \cdots & c_{1m} \\ \vdots & \ddots & \vdots \\ c_{m1} & \cdots & c_{mm} \end{pmatrix} \tag{4}$$

3) Calculating the relative weights of the evaluation items relative to the higher-level items based on the comparison judgment matrix.

4) For objective I, the relative weights of the m directly subordinate items $\mathrm{I}_1^1, \mathrm{I}_2^1, \dots, \mathrm{I}_\mathrm{m}^1$ relative to i objective I are determined as $\mathrm{w}_1, \mathrm{w}_2, \dots, \mathrm{w}_\mathrm{m}$ based on the comparative judgment matrix $\mathrm{C(I)} = [\mathrm{c_{ij}}]_{\mathrm{m\times m}}$ by calculating the maximum characteristic root $\lambda_{\max}$ and the characteristic vector W of the matrix C(I) using the following formula:

$$\mathrm{C(I)W} = \lambda_{\max}\mathrm{W} \tag{5}$$

The obtained $W = (w_1, w_2, \dots, w_m)^T$ is normalized as the relative weights of the lower-level items $I_1^1, I_2^1, \dots, I_m^1$ relative to objective I.

Table 2. Evaluation of relative importance

Rank of importance	c_{ij} **value**
I is as important as *j*.	1
I is mildly more important than *j*.	3
I is moderately more important than *j*.	5
I is highly more important than *j*.	7
I is extremely more important than *j*.	9
I is mildly less important than *j*.	1/3
I is moderately less important than *j*.	1/5
I is highly less important than *j*.	1/7
I is extremely less important than *j*.	1/9

5) Consistency test

After the relative weights are derived based on the judgment matrix in the previous step, consistency test needs to be conducted to see whether the importance of each indicator is coherent with each other and check whether there are contradictory results. If the consistency ratio CR is less than 0.1, it means that the consistency test is passed, and if it does not pass the test, it is necessary to modify and adjust the judgment matrix and recalculate the weights until satisfactory results are obtained.

3.2.3. Calculation of Weights of Items in the SERVQUAL Evaluation Model for Translation Service Quality: An Example

Figure 2 gives the three-level evaluation items of the SERVQUAL evaluation model for translation service quality, but the relative and absolute weights of the items at each level are not given.

Consider the first-level evaluation item I_4 = "Assurance" and the six second-level items $I_{41}^2 \sim I_{46}^2$ under this index as shown in Table 3.

It is assumed that for these six items, the judgmental matrix as shown in Table 4 relative to item I_4 is determined by conducting interviews of experts in QM for translation services.

The relative weights W= $(I_{41}^2, I_{42}^2, I_{43}^2, I_{44}^2, I_{45}^2, I_{46}^2)^T$ = (0.1507, 0.1792, 0.1886, 0.0472, 0.1464, 0.287) of these six items were calculated, and the consistency ratio $CR = CI/RI = 0.0981 < 0.1$, which passed the consistency test. Therefore, the weight W is a reasonable and feasible weight.

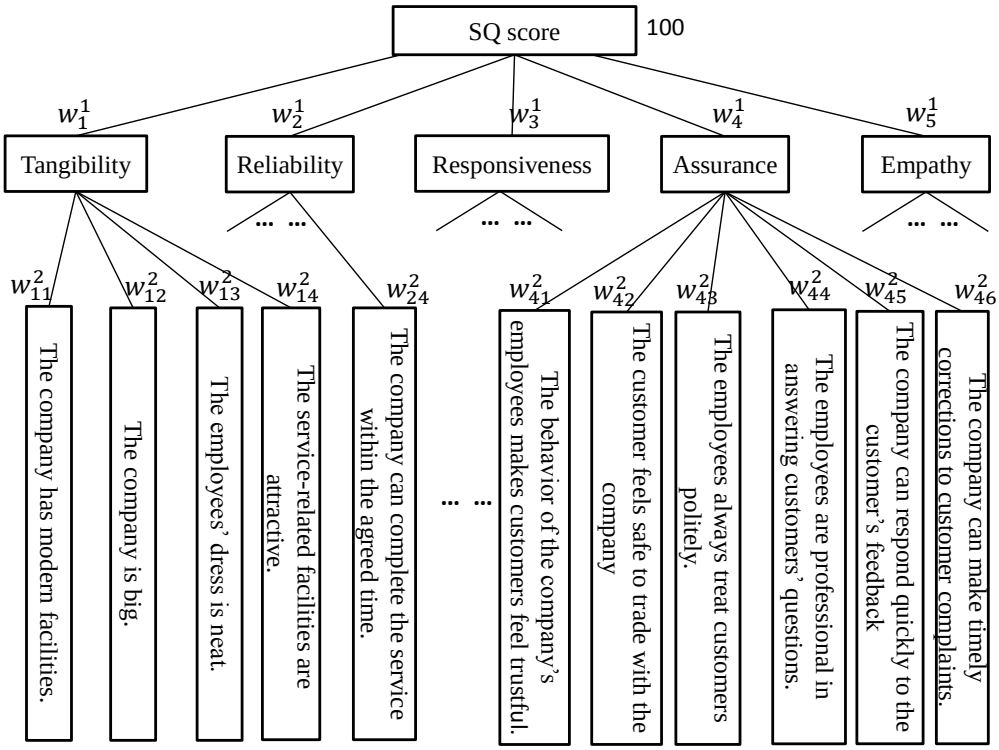

Figure 2 SERVQUAL evaluation model for translation service quality (Only some indicators are illustrated.)

Table 3. Items $I_{41}^2 \sim I_{46}^2$ and their calculated weigh

Item	Weight	Meaning of the Item	Weight Value
I_{41}^2	w_{41}^2	The behavior of the employees makes customers feel trustful.	15
I_{42}^2	w_{42}^2	The customer feels safe to trade with the company.	18
I_{43}^2	w_{43}^2	The employees always treat customers politely.	19
I_{44}^2	w_{44}^2	The employees are professional in answering customers' questions.	5
I_{45}^2	w_{45}^2	The company is able to respond quickly when to the customer's feedback.	15
I_{46}^2	w_{46}^2	The company can make timely corrections to customer complaints.	28

Table 4. Matrix to judge the relevant importance of items $I_{41}^2 \sim I_{46}^2$

	I_{41}^2	I_{42}^2	I_{43}^2	I_{44}^2	I_{45}^2	I_{46}^2
I_{41}^2	1	1	1	4	1	1/2
I_{42}^2	1	1	2	4	1	1/2
I_{43}^2	1	1/2	1	5	3	1/2
I_{44}^2	1/4	1/4	1/5	1	1	1
I_{45}^2	1	1	1/3	3	1	1
I_{46}^2	2	2	2	2	3	1

It can be seen from the weight W that: 1) Item I_{46}^2 has the largest weight, and the importance values of this item in pair comparison to other items in the comparison matrix are (2, 2, 2, 2, 2, 3), which is more important than all other 5 items; 2) The indicator I_{44}^2 has the smallest weight and the importance of this item in relation to other items in the comparison matrix is (1/4, 1/4, 1/5, 1, 1), which is less important than all other 5 items.

Therefore, it can be seen that relative importance of the items obtained from the comparison matrix and that reflected by the calculated weight values are consistent.

In practical application, W =(0.1507, 0.1792, 0.1886, 0.0472, 0.1464, 0.287) can be rounded off to W =(0.15, 0.18, 0.19, 0.05, 0.15, 0.28), which can be used as the weights of the six second-level items $I_{41}^2 \sim I_{46}^2$ relative to the first level item I_4= "Assurance".

3. CONCLUSION

Translation services are divided into three leading processes, that is, translation service provision process, management process, and support process. A customer-focused QMS for translation firms based on the three leading processes is established, in line with the criteria promulgated in ISO9001: 2015, to improve QM performance in translation firms. An evaluation model, for SQ in translation firms, which contains five dimensions and 22 items, is developed by modifying some of the items in the multiple-item scale in Parasuraman's SERVQUAL model.

The study finally provides the methods based on analytic hierarchy process to determine the relative weights of each item in the evaluation model. An example is given in the end to illustrate how the weight of each item can be calculated. This study provides methods to construct an efficient QMS and effective evaluation model to measure the firm's performance in service quality, in the hope that it can help improve the quality of translation services. To better understand the implications of the QMS and the evaluation model, future studies need to be implemented in customers' perception and expectation in quantitative ways.

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