Research and Construction Method of Service Quality Evaluation Model based on Customer perception in Online Education Field

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Abstract—**This article uses the service blueprint technology to display the online education service process, showing the service process in the online learning system, contact point between service and customer and the service elements that are visible to customers. This top-down approach solves the problem of transience when describing services. According to the service blueprint, this paper gives the list of keywords, and uses web crawler technology to analyze the online education problems that the customers are most concerned about. We use this bottom-up approach to compare the concerns with the international and domestic quality models related to online education, and then find the key points that affect the quality of customers' feelings. Through this method, the main evaluation indicators of service quality are constructed.**

Keywords—online education;service quality model;service blueprint; customer perception;

I. INTRODUCTION

Service quality has been a continuous concern in online education field. Various international organizations also regulate the quality requirement of online education services.

The ISO 9000 series quality standard is widely used in the world. It is the quality control and assurance standard of management system in the production and service providing process. It includes eight quality assurance principles, they are customer-oriented, the leadership, engagement of people, the process approach, the management systems, continual improvement, evidence based decision and the mutually beneficial relationship with suppliers.

The International Organization for Standardization has a project committee PC288 to develop quality related standard in education field. They will publish the ISO 21001 "Educational organizations management systems - Requirements with guidance for use" sooner. ISO 21001 matches the benchmarks of ISO 9000, but it is not only a guide to the application of ISO 9001 in education, but also considers the characteristics of educational organization. It defines the educational organization management system that entails the following management principles: focus on learners and other beneficiaries; visionary leadership; engagement of people; process approach; improvement; evidence-based decisions; relationship management; social responsibility; accessibility and equity; ethical conduct in education.

The ISO/IEC JTC1 SC36 is another international standardization committee in ISO. They set up a quality working group related to online education, and has now published a quality standard named "the basic principles and reference framework for the quality of information technology learning education and training", with number ISO/IEC 40180.This IS defines a quality reference framework（short for "QRF"） for quality management, assurance and improvement when learning supported by information technology. The QRF process model includes the relevant processes within the whole life cycle of learning, education and training. The QRF process model is divided into seven parts called process categories, such as needs analysis, framework analysis, conception/design, development/production, implementation, learning process and Evaluation/Optimization.

The International Council for Open and Distance Education (short for ICDE) issued the first global online, open education quality model assessment report in 2015, and gives 11 recommendations from different perspectives, for instance, guaranteeing the basic principles of quality online learning, the quality assurance of traditional educational institutions, establishing the quality standards of mobile learning system, solving the problem of classification and non-traditional suppliers, knowledge building and sharing, and balancing the attitude of different experts and stakeholders on the knowledge resources. ICDE also points out that the current research is not comprehensive enough. Collaboration is needed to formulate and publish relevant standards for quality assurance, so that to

provide oversight mechanisms for the development of open and online educational resources.

The official certification body for online education in Europe is European Foundation for Quality in E-Learning （short for EFQUEL）. The foundation is committed to providing certification schemes and tools. It also shares best practice of how E-Learning enhancing personal, organizational and regional development and experience of how to make E-learning promoting digital learning culture and social cohesion, even to improve the quality of technology-based learning.

UNIQUe certification is a certification for higher education institutions. The purpose is to help colleges and universities to measure and certify technology-based learning and provide support services for their sustainable development. The certification standard it provides is not only concerned with online instructional design, but also focuses on the application of ICT in learning support. It requires the certification bodies to meet the high quality standards such as objectives, structure, content, resources and learning process. The UNIQUe certification standard has 3 first level indicators: learning strategy framework, learning resources and learning process. There are 10 indicators in the second level and 74 in the third level.

This paper focuses on finding the quality assurance methods and the quality model for online educational service providers. Combining the quality assurance requirement of provider and the customer's feeling, the paper tries to establish an online education service quality evaluation model on customer perception..

As shown in Figure 1, the research framework of this task is divided into drawing online education service blueprint, using data crawling technology to find online education service users' pain points from the Internet, and then match the service elements of blueprint with the results of online data crawling. After that, the results are compared with the international and domestic quality model to find the online education quality model, which pay more attention to customers' perception.
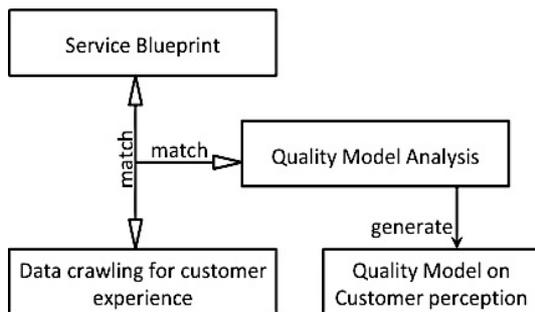

Fig. 1. Research framework

II. SERVICE QUALITY EVALUATION METHOD ON CUSTOMER PERCEPTION

SERVPERF is the abbreviation of Service Performance. Cronin & Taylor put forward a performance perception method to measure the quality of service. in 1992, namely SERVPERF, its scale is shown in Table 1.

TABLE I. SERVPERF RUBRIC

Factor Category	Component Items
Tangibles	The company should have advanced equipment.
	The company's equipment has a clear attraction.
	The employee is well dressed and tidy.
	The equipment and appearance should be matched with the service provided.
Reliability	The company is able to fulfil its promise at a certain moment.
	The company should show compassion when customers encounter difficulties.
	The company is trustworthy.
	The company should provide service at the time of commitment.
	The company should ensure the correctness of the record.
Responsiveness (contrary)	Customers can not expect companies to tell them to provide service on time.
	It is unrealistic to expect the company to provide timely service.
	Staff are not always willing to help the customers.
	Staff can not answer the customer's request immediately because they are busy.
Assurance	The staff of the company are trustworthy.
	When dealing with the trade, the customer will feel relieved.
	Staff are polite.
	Staff can receive appropriate support from the company to provide better services.
Empathy (contrary)	The company does not provide individual services to customers.
	Staff will not give customers individual care.
	You can't expect employees to understand the needs of their customers.
	The company does not give priority to the interests of the customers.
	Service time can not meet all customers' needs.

SERVPERF uses a variable, namely service performance, to measure customer perceived service quality. The calculation formula is as follows:

$$Q = \frac{1}{m}\sum_{i=1}^{m}\overline{P_i}$$

(1)

In the formula：

Q is a quantitative index of total perceived service quality in SERVPERF method.

$\overline{P_i}$ is a customer's perceived average value for a I problem is a customer's perceived average value for a I problem.

M is the number of problems in the SERVPERF scale.

This paper uses and modifies the SERVPERF evaluation method, and divides the online education service characteristics into six aspects, namely, functionality, responsiveness, empathy, comfort, security and economy. In the online education service performance evaluation, the customer's perception of these six aspects will contain the following information.

Functionality: Online educational service providers can fulfill their commitments reliably and accurately.

Responsiveness: The organization is willing to help customers and is always ready to provide fast and effective service to customers.

Empathy: The ability of organizations to care for customers and provide personalized service to customers.

Comfort: The ability of an organization to provide a pleasant experience for customers.

Security: In the process of online education service, the safety and confidentiality of customers' personal property, data and information, as well as the security of service facilities and service contents.

Economy: The degree of rationality of online educational service charges, and the degree of conformity of customers' cost / time with the knowledge / ability gained.

III. SERVICE BLUEPRINT OF ONLINE EDUCATION

Firstly, we use the service blueprint technology to sort out the online education service process , describing every process in the service system. We identified the interface between the service and the customers, and find the visible service elements for the customers. Service blueprint technology can solve the problem in instantaneous of service evaluation, as well as display service processes more comprehensively.

This paper analyzes the service process of the mainstream online educational institutions and platforms in China, drawing out a number of different types of online education service blueprints, as shown in Figure 2. Based on this, the paper find common features from different types of online education services and draw up a general framework for online educational service blueprints, as shown in Figure 3.
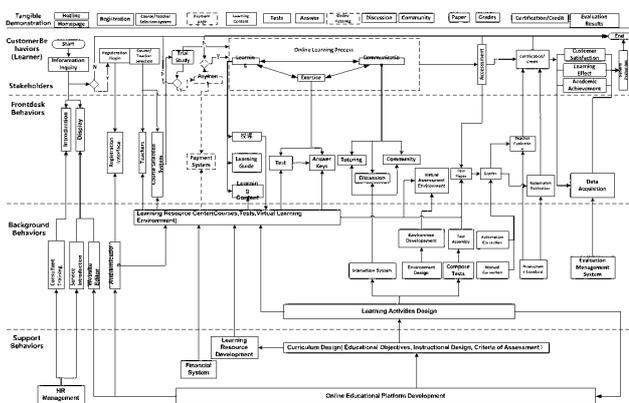

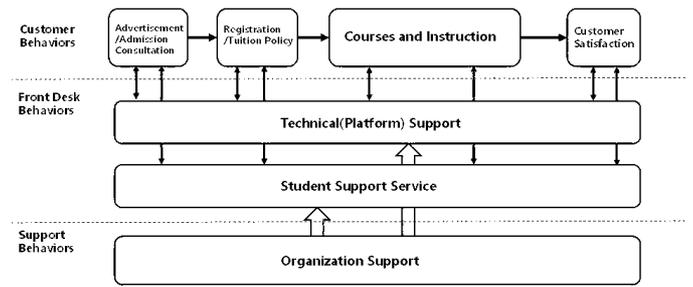Fig. 2. Specific service blueprint

Fig. 3. General service blueprint

IV. CUSTOMER CONCERN ANALYSIS ON ONLINE EDUCATION SERVICE

According to the service blueprint, this paper puts forward 45 categories including 165 keywords. After searching for keywords and synonyms in CNKI, this paper analyzes the results of keyword crawling on online education websites, and obtains the data distribution map of the degree of concern, as shown in Figure 4. Then this paper analyzes the functions of 11 online education service institutions, and finds the coverage or provision of customer concerns in the functions of these websites, as shown in Figure 5.
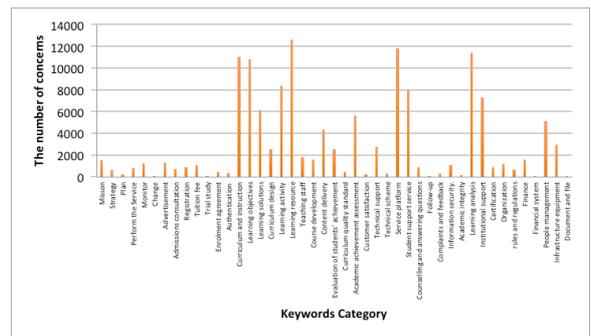

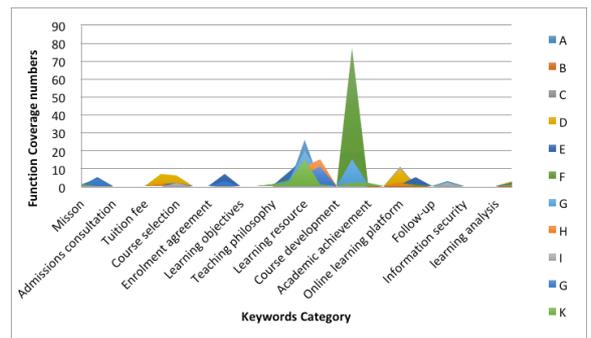Fig. 4. Customer concern of online education service industry.

Fig. 5. Response of online education websites to concerns

As shown in Figure 5, although there are differences in the coverage of major categories by online education websites, they all cover the common categories. This shows that the key words that we extract from customers can reflect current industry concerns. There are obvious differences in the degree

of attention of each service element. This paper selects the evaluation points of the elements through the data results, and determines the importance and weight of the evaluation points according to the results of the data.

At present, the analysis data of online education website is still preliminary data, and data volume and semantic analysis need further improvement. However, it can be seen from the current data that online educational institutions have a high degree of concern for learning resources, learning activities, teachers, learning assessment, consultation and answering, complaint feedback, mission, qualification and other indicators, and pay less attention to information security, academic integrity, data analysis, customer satisfaction or other indicators. The data reflect the short board of the online education industry.

V. SERVICE QUALITY EVALUATION MODEL OF ONLINE EDUCATION

From the perspective of customer perception, we follow the general service elements identified in the service blueprint, and construct the online education service quality evaluation model with three aspects including service capability, service process and service performance. The complete online education service evaluation model proposed in this paper includes five aspects: basic requirements, service resources, service process, service performance and characteristic innovation. The specific indicators are shown in Figure 6.

The basic requirements include business qualification and reputation, organizational structure, and financial system.

The service resources include mission planning, infrastructure, technical support, human resources and document management.
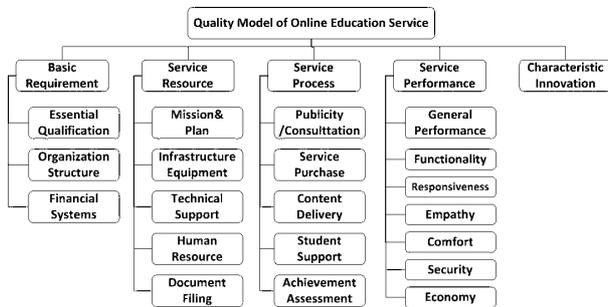

Fig. 6. Service quality evaluation model of online education

The service process includes advertising and enrollment consultation, purchase service and registration, content and support services, student support services and academic achievement assessment.

The service performance includes general feelings, functionality, responsiveness, empathy, comfort, safety and economy.

The characteristic innovation mainly reflects the organization's idea and management system of organization culture and service, and needs the recognition of customers.

VI. CONCLUSION

In the process of model building, we draw the online education service blueprint from top to bottom, and use the web crawler technology to analyze the most concerns of the customers from the bottom to top.

This paper matches the service elements in the service blueprint with the data crawling results, and proposes an online education service quality evaluation model based on customer perception.

Different methods will be adopted to evaluate different aspects in the quality model; for example, the service resources and service process indicators can be evaluated by management system audit, mysterious customer experience, and expert evaluation. The service performance can be evaluated by the methods of data mining, mysterious customers experience, customer investigation and so on. The evaluation of various indicators in the quality model is the main task of our next work.

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