Chapter 21
ITSQM: A Conceptual Model of IT Service Quality

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Abstract With the development of information technology and the integration of IT and business, IT industry is changing from product-oriented to service-oriented. As a result, IT service management has become more and more important. One of most issues concerned both by researchers and practitioners is IT service quality. Since the shift from product to service, traditional hardware and software have been integrated into service. Thus, traditional quality evaluation methods of software and hardware product cannot meet the requirements of IT service quality evaluation. With this goal, in this paper, we will propose a conceptual IT service quality evaluation model (ITSQM).

Keywords Component · IT service · Service quality · IT management

21.1 Introduction

With the rapid development of information technology (IT), which brings continuous popularization of the network computing, sequential upgrade of the hardware, ongoing change of the application, and in-depth integration of business and IT, a great development. has immerged in the global software and IT service industry.

Global IT service market scale is huge and the industry scale keeps growing at a steady speed. Gartner report shows that, in 2011, IT expenditure of global enterprises will hit 2500 billion dollars, 3.1% higher than that in 2010 (2400 billion dollars). The expenditure in 2014 is expected to hit 2800 billion dollars. In the future, global IT service industry will grow steadily and become the highlight of development of the whole IT industry. As driven by global economic recovery, IT service needs increase rapidly. Countries and organizations will pay more attention to IT

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service markets and take IT service as the key industry and prepare corresponding development strategies for support and development.

On the other hand, Global IT industry has a new trend which is changing from product-oriented industry to service-oriented industry. The IT service industry becomes a new engine of the IT industry development. The new characteristics of global IT industry are becoming more and more significant. The core competition of industry and market is transformed from "product and technology" to "service". A lot of well-known IT enterprises take IT service as key development direction. Multinational giants represented by IBM and HP have achieved successfully transformation from traditional product provider to IT service provider so as to enhance their competitive capacity and market role.

As a result, IT service has become more and more important [1], meaning while, a series of themes about how to manage IT service are coming One of most concerned both by researchers and practitioners is IT service quality evaluation. Since the shift from product to service, traditional hardware and software have been integrated into service. Thus, traditional quality evaluation methods of software and hardware product cannot meet the requirements of IT service quality evaluation. With this goal, in this paper, we will propose a conceptual IT service quality evaluation model (ITSQM).

21.2 Literature Review

21.2.1 Service Quality and IT Service Quality

Service quality, as a complex structure variable, comes from the marketing research field. Many researchers make great efforts to carry out the service quality research and get a great achievement: with referring to all service quality definitions, it is a common sense to consider customer perception. As this research field pioneer, Gronroos firstly proposed that, the service quality is a kind of customer perception. In his research, the service quality is defined as "perceived by the customer as being the difference between customer expectations and their experience of the services" [2]. Similarly, Parasuraman et al [3] regarded the service quality as the gap between expected and perceived of the services. They indicated "service quality is the result of differences between expectations and the actual performance of the service". In Bitner and Hubbert's research, they defined the service quality as "an overall impression of advantages or disadvantages of organization and its services on consumers" [4].

IT service quality concept is introduced from the service quality of marketing and specially refers to IT-related service quality. According to the research literature, IT service quality still need emphasize the customer perception of IT services. We regard IT service quality as the extent to which the inherent characteristics of IT services satisfy needs.

21.2.2 Service Quality Model

There are various efforts to design conceptual models of service. Quality researchers propose a lot of service quality models based on service quality defination. In this paper, we will introduce three representative models in references:
(1) Gronroos Model

The first model is from the physical product research. Gronroos firstly introduced such model to the field of service quality [4]. In this model service quality is the difference between customer perception and expectations of services, and regards service quality is composed of technical quality and functional quality, as shown in Fig. 21.1.
(2) GAPs Model and SERVQUAL Model

GAPs model and SERVQUAL is the most famous theory in service quality research. Parasuraman et al [3] explored GAPs model through group interviews research. In GAPS model, GAP5 is a function of GAP1, GAP2, GAP3 and GAP4, which reflects the service quality (GAP5 = f (GAP1, GAP2, GAP3, GAP4)). Based on the GAPs model, Parasuraman et al developed 22-items instrument SERVQUAL model (as shown in Fig. 21.2) through qualitative research method for assessing customer perceptions of service quality [3]. In the SERVQUAL model, service quality has five dimensions of 22 items. The five dimensions are reliability, tangibles, responsiveness, empathy and assurance.
(3) Multilevel and Hierarchical Models

Following the criticism of SERVQUL, Dabholkar et al recognized that the SERV QUAL model has been empirical validation in the pure service industry (e.g., banks, telephone service), But does not fit to all service industry. Therefore, he designed a new model called RSQS (Retail Service Quality Scale) by qualitative and quantitative methods [5]. This hierarchical model is that the evaluation of service quality is not simply achieve by the compression of perceived service and expected ser-

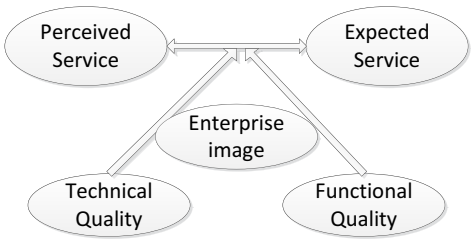

Fig. 21.1 Gronroos model

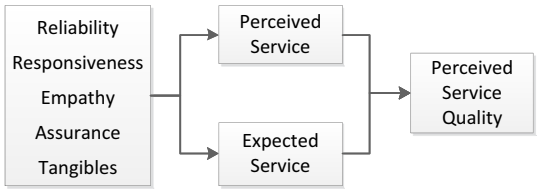

Fig. 21.2 SERQUAL model

vice, but based on three levels: 1) the overall service quality level, 2) the level of the primary dimensions and 3) sub-dimension level as shown in Fig. 21.3. Among them, the service quality as the top level, determined by the five primary dimensions (tangibles, reliability, personal interaction, problem solving and policy), each of the primary dimensions determined by their respective sub-dimensions.

21.3 Research Progress

The nature of service determines the service quality is difficult to be measured, not to mention the IT service quality. The literature reviews indicate that there are arguments about the definition and measurement of service quality among scholars. Although the SERVQUAL and SERVPERF model are widely used to measure the quality of service in different industries, they are built on the basis of traditional services [6], some scholars criticize that there are limitations in these model when applying them to measure some new service quality, such as the e-commerce services quality [7–9], IT service quality. The literature reviews reveals that researchers agree service quality is a multi-dimensional structure variables [10]. For this reason, we will develop IT service quality model based on hierarchical model.

Because of lack of sufficient IT service quality literatures and IT service quality is complex system influenced by various issues. The development of a conceptual model of IT service quality is very difficult. According to the literatures, in this situation, researchers usually use exploratory factor analysis - qualitative research method. Just as Mintzberg said “qualitative research is direct research”. Qualitative research method has been widely used in many disciplines, especially in the field of marketing and consumer behavior. Parasuraman et al developed SERVQUAL model through qualitative research method. Dabholkar et al developed RSQS model also through this qualitative research method. We will use the same method to develop IT service quality model.

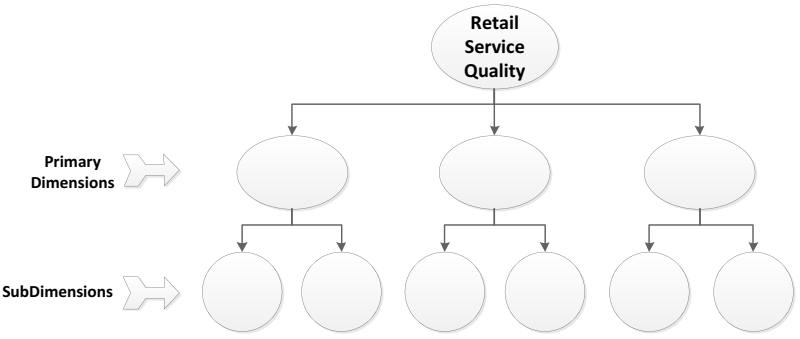

Fig. 21.3 Hierarchical model

In this research, qualitative research is divided into two stages: (1) personal depth interviews with IT service providers and (2) groups interviews with IT service customers. These two stages are guided and implemented by trained student using open interviews and semi-structured questionnaire. The interview and questionnaire is built on the basis of the general concept of service quality defined in the literature in qualitative research.

21.3.1 Personal Depth Interviews with IT Service Providers

We selected 11 managers from IT service provider to participate in our personal depth interviews. They come from different department of the IT service enterprise (e.g. marketing department, customer service department, and service design department). In the interviews, the managers in accordance with their respective IT services work were asked to answer the following questions as much detail as possible:

1. What is the IT service quality perceived by their IT service customers?
2. What are the most important factors affecting the IT service quality in their mind?
3. What measures have they taken to deliver high quality IT services?
4. What problem do they have encountered in the process of providing IT services?

We have kept the record of the depth interviews in order to ensure the reliability of the research.

21.3.2 Groups Interviews with IT Service Customers

104 IT service customs have taken in our research. According to the type of the IT service they used, we divided them into 5 groups, and organized interview in groups. The 5 types of IT service are IT consulting service, IT design and development service, IT integration service, data processing and operation service, and new IT service such as cloud computing. Each group is asked to answer the following questions as much detail as possible:

1. What is the IT service quality they perceived?
2. What factors are affecting the IT service quality in their view?
3. What measures do they wish the IT service provider to take to improve IT services quality?

We also have kept the record of the group interviews in order to ensure the reliability of the research.

21.3.3 Data Analysis

After finish the two-stage interviews, we analyze the interviews record, and get the result of qualitative research. Although the participants were asked to list all factors that affect each of the main dimensions of IT service quality model, we selected the factors which are the literature generally accepted by most scholars. In the initial sequence of the factors, according to Dabholkar, Thorpe, et al. suggestion, we delete the factor - price from the factors sequence. Because they pointed out that the price factor does not belong to the general understanding of the service quality.

We use content analysis method to code the content of the interview record. We code information by the frequency of text content. Firstly, we identify the primary dimensions, and then classify the content code with the same or similar meaning by primary dimensions, in this way, we identify the sub dimensions. When a content code is classified into difference primary dimensions, we need to reestimate the reliability. After interviews data analysis, we get an IT service quality model with 5 primary dimensions and 16 sub dimensions.

21.4 IT Service Quality Model

According to factor analysis results, the final IT service quality model is as shown in Fig. 21.4.

In this model there are 5 primary dimensions which are security, reliability, responsiveness, tangibles and empathy. The security dimension has 3 sub dimensions which are availability, integrity and confidentiality; the reliability dimensions has 5 sub dimensions which are availability, integrity and confidentiality; the responsiveness has 2 sub dimensions which are timeliness and interactivity; the tangibles has 2 sub dimensions which are visibility and profession; the empathy has 3 sub dimensions which are flexibility, proactivity, and courtesy.

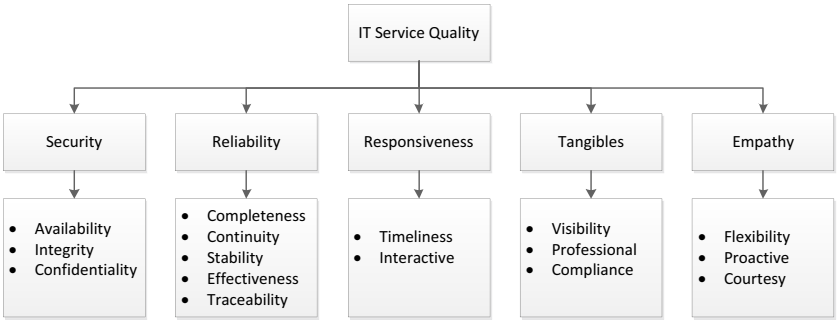

Fig. 21.4 ITSQ model

The primary dimensions and sub dimensions are described in detail as following: (1) Security: The capability of information technology service supplier to guarantee the security of information and relevant resources when providing service.

- Availability: Securing that the normal use of information and relevant resources by authorized users of customer should not be abnormally denied and allowing such users to reliably and timely access and use information and resources when necessary.
- Integrity: Securing that customer's information and resources obtained by supplier during service provision should not be distorted, disrupted or transferred without authorization.
- Confidentiality: The service provided by supplier should secure that customer's information and resources should not be revealed to unauthorized users or entities in the course of use and transmission.

(2) Reliability: The ability of information technology service supplier to perform the service agreement under the provided conditions and within the provided time limit.

- Completeness: The service provided by the IT service supplier should cover all the terms committed in the service agreement.
- Continuity: The ability to secure the fulfillment of the service agreement under all circumstances. It includes two aspects, the commitment to mitigate risks to a reasonable level and to recover business after suspension of the same.
- Stability: The service provided by IT service supplier should continuously and steadily comply with the provisions in the service agreement.
- Effectiveness: The capacity of IT service supplier to effectively settle service requests according to the requirements of the service agreement.
- Traceability: The ability of the supplier to keep complete and documented original record of involved activities in the service process.

(3) Responsiveness: The capability of the IT service supplier to timely responds to the service requests from the customer according to the service agreement.

- Timeliness: The speed at which the IT service supplier responds to the service requests according to the service agreement.
- Interactivity: The ability of the supplier to guarantee the fast and accurate information exchange between the supplier and the customer by establishing the appropriate interaction and communication mechanism.

(4) Tangibles: The ability of supplier to demonstrate its services by tangible evidence.

Note: Such evidences usually include brand, personnel image, service facilities, service process, service tools, etc.

- Visibility: The ability of the supplier to demonstrate its service to the custom in a visible method.

- Profession: The extent of normality, standardization and advancement demonstrated by supplier in the course of service.
  Note: It includes the compliance of perfection degree of the deliverables.
- Compliance: The ability of the IT service to obey standards, agreements or laws and regulations as well as the similar stipulations.

(5) Empathy: The ability of the supplier to sympathize with the customer and to give special attention to the customer.

- Flexibility: The ability for the supplier to provide customized service to the customer according to their personalized needs.
- Proactivity: The ability of the supplier to initiatively perceive the demand of the supplier and actively take measures to ensure the service delivery.
- Courtesy: The capability of the supplier to standardize the service languages, behaviors, and attitudes showed in the process of service provision.

21.5 Conclusion and Further Research

In this research we just develop a conceptual model of IT service quality with 5 primary dimensions and 16 sub dimensions. But this is only the beginning of the research, the model needs to be further purified and validated through exploratory factor analysis by survey study. A confirmatory factor analysis will also be needed to analyze the relationship between the factors.

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