Factors Influencing Service Quality of IT Outsourcing at School

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Abstract

Schools always look for external specialized contractors and suppliers while the incapability of IT service, the availability of human resource and organizational issue are being considered. Therefore, IT service outsourcing has been becoming a significant lesson to learn by schools to meet and balance the scarcity of school's IT operational capabilities. Based on the service quality model of Parasuraman, Zeithaml & Berry proposed, the study examined Gap 5 and five perceptions of the service quality model about IT service outsourcing at school. The research result showed that there were significantly differences between expectations and perceptions of IT service outsourcing at school. Reliability is the most important construct of service quality expectation. Empathy is the least important factor of service quality expectation. Assurance is the most satisfaction of service quality perception. Tangibles is the least satisfaction of service quality perception. As a consequence, regarding to the total satisfaction of service quality, the average value can reach the level of satisfaction. Perceived tangibles, reliability, responsiveness, assurance and empathy are positively related to the total satisfaction. Through the assessment of service quality, it will be good understanding of the service quality in IT outsourcing and the improvement direction.

Keywords: Service quality, IT outsourcing, customer satisfaction, expected service, perceived service

1. Introduction

In recent years, the information technology services (ITS) industry has continuously pursued new technologies and improved efficiency, and "customer satisfaction" has become one of the most important management elements in the current ITS industry. In fact, customer needs must be considered, and a set of standard and stable service procedures must be established to fully satisfy customers in terms of service quality. Although service quality does not immediately affect short-term profits, it is an essential invisible asset for the ITS industry. Thus, the management strategy and focus have gradually changed from conventional price orientation to service orientation. The improvement in "service quality" can help not only set up a good corporate image in the ITS industry but also maintain customer loyalty. In addition, improvement in "service quality" is a key factor in achieving customer satisfaction. The true needs of customers must be fully understood to improve ITS quality because achieving service quality can fully satisfy customers.

ITS outsourcing is a method frequently utilized by corporations, and government offices also have related regulations. According to "Regulations for Selection and Fee Calculation of Information Services Providers Entrusted by Entities," the term "information services" in subparagraph 9 of paragraph 1 of Article 22 of the Act refers to services related to computer hardware and software, including overall planning, system integration and organization, system inspection and evaluation, system management, network management, software development, software inspection and testing, software maintenance, hardware maintenance, hardware operations, plant infrastructure management, support services, network services, consultant services, database setup and storage, data processing, data input, training and promotion services, and others. Certainly, this list also includes ITS outsourcing in each public and private school and is known as "campus services outsourcing."

Private schools have a severe shortage of information staff and technologies. Thus, they must depend on and cooperate with external ITS providers to apply and develop information technologies on campus. No survey has been conducted on customer satisfaction of IT outsourcing services since the previous one conducted in 2001 by the Directorate General of Budget, Accounting and Statistics, Executive Yuan, R.O.C. In this study, public and private schools in the Taoyuan District are the respondents, and the main study aims are as follows:

(1) To examine the service level reflected in school for the dimension of service quality of outsourcing service companies;

(2) To examine the correlation between the overall satisfaction of schools and the

service quality of outsourcing service companies; and,

(3) To examine the gap between the service expectations of schools and the service quality of outsourcing service companies.

2. Literature Review

2.1 Information Technology Outsourcing

Loh and Venkatraman (1992) defined information technology outsourcing as "the significant contribution by external vendors in the physical and/or human resources associated with the entire or specific component of the IT infrastructure in the user organization." We can consider and discuss whether the degrees of the two factors-"internal human resources" and the "internal technologies resources"-of companies (as shown in Figure 1) can affect the decision to use outsourcing services.

Claver et al. (2002) believed that ITS outsourcing can save labor costs and enhance the work flexibility of IT departments. In addition, ITS outsourcing can help the staff focus on enhancing core information competencies, handle difficult questions, save on technology development costs, and improve the operation quality of IT projects. Additionally, the application of new technologies will increase, and the risks of using obsolete technologies will decrease. The advantages of ITS outsourcing stated by Antonucci and Tucker (1998) indicate the belief that the benefits of outsourcing include increasing enterprise concentration, having access to talent with outstanding professional skills, accelerating business process re-engineering to gain profits, and spreading risks. Additionally, the secondary tasks of the internal staff can be reduced such that more staff will be available to work on the main tasks.

McAulay et al. (2002) studied a multinational corporation in Britain and the corresponding ITS provider. In their study, the managers of the IT and non-IT departments were studied respectively to analyze the benefits and risks of ITS outsourcing. The main methods included sending questionnaires to the respondents and conducting interviews. In addition, the important issues were determined before being discussed in the interviews. The survey showed that the aims of outsourcing included reducing IT staff, decreasing operational costs, improving operational efficiency, and reducing maintenance costs. At the same time, the risks included difficulty managing providers, dependency on providers, providers' lack of industry knowledge, and the opportunism of providers. Managers of IT and non-IT departments and the IT staff attached significantly different degrees of importance.

2.2 Service Quality

In recent years, given the booming development of the service industries, the definition of quality is not only about the product itself but also includes an emphasis on customer experience, which is intangible. Etzel et al. (2001) argued that service quality is the result of a consumer's comparison between the excepted service and the actual experience. Furthermore, Hong and Goo (2004) pointed out that service quality often had a decisive impact on customer satisfaction with the services provided by the company. Thus, improving service quality has become a business strategy for providers to satisfy customer needs, create customer value, and increase company profits.

Parasuraman et al. (1988) noted that the service experience and the perceived service quality mentioned by interviewers during the focus interviews were inconsistent with the service characteristics recognized by the general public. Because evaluating service quality is difficult, a conceptual model of service quality was proposed, called the PZB model for short. This model mainly explained the reasons why the provided service quality cannot satisfy customer needs. In addition, if service providers want to improve service quality, they must improve the five gaps in this model.

Subsequently, in 1988, academic researchers including Parasuraman et al. (1988) used data collected from companies in retail banking, credit card services, repair and maintenance of electrical appliances, and long-distance telephone services to reduce the 97 items in the ten dimensions of the original instrument to 22 items in five dimensions. This method was called SERVQUAL and was the first scale to effectively evaluate service quality. The SERVQUAL scale is highly valued, has been examined by local and overseas academic researchers, and is widely cited in related studies. Simultaneously, a service quality formula was proposed.
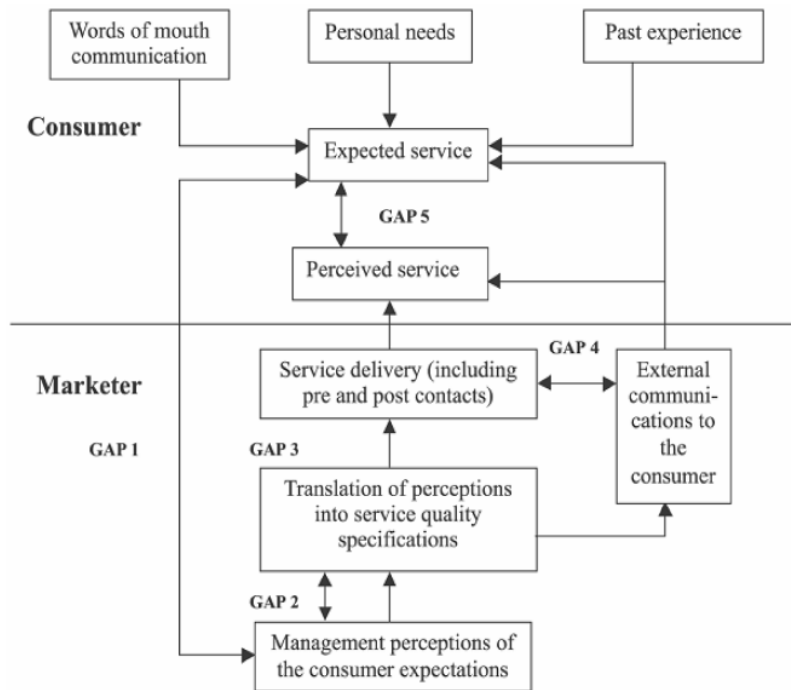
SQ (Service Quality) = P (Perceptions) – E (Expectations)

2.3 Customer Satisfaction

Customer satisfaction depends on the degree of realization of commodity benefits expected by customers and reflects the consistency between expectations and the actual result. When performance exceeds expectation, customer satisfaction improves (Parasuraman et al., 1985). Wen (2002) pointed out that "customer satisfaction" refers to the comparison between and evaluation of expected products or services and actual customer experience. In other words, when the actual customer experience can match or exceed the expected experience, customers are satisfied; otherwise, they

are discontented. Cronin et al. (2000) proposed a model that can explain the correlation among service quality, value, and customer satisfaction. During the study, six different industries were investigated based on previous marketing ser-

vices. The result showed that service quality had a significant impact on customer satisfaction.

Source: Parasuraman *et al*. (1985)

3. Research Method

The conceptual framework in this study is mainly based on the service quality model proposed by Parasuraman et al. (1985, 1988). Service quality is obtained by customers who make comparisons between the importance of service expectation and satisfaction with service experiences. Some service quality meas-

urement items have been modified to be more suitable for service quality evaluation on ITS outsourcing companies. Apart from customer expectations and experiences, the effects of overall customer satisfaction were also examined in this study. The framework of this study is shown in Figure 1.
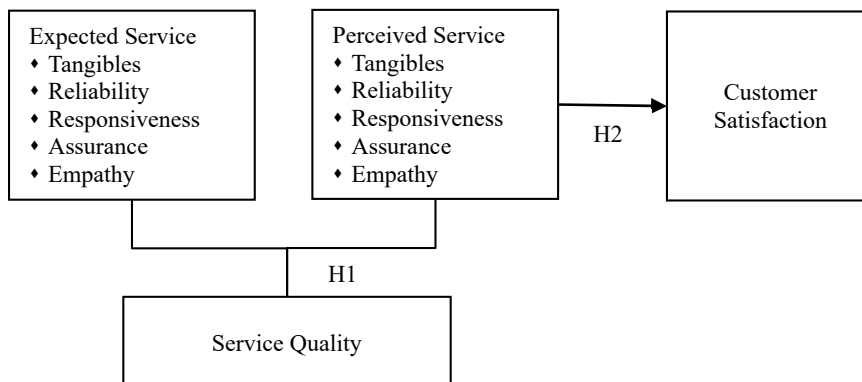

Figure 1: Research Model

H1: There are significant differences between expected service and perceived service.
  H1a: There are significant differences between expected service and perceived service of tangibles.

H1b: There are significant differences between expected service and perceived service of reliability.

> *H1c: There are significant differences between expected service and perceived service of responsiveness.*
> *H1d: There are significant differences between expected service and perceived service of assurance.*
> *H1e: There are significant differences between expected service and perceived service of empathy.*
> *H2: Perceived service are positively related to customer satisfaction.*
> *H2a: Perceived service of tangibles are positively related to customer satisfaction.*
> *H2b: Perceived service of reliability are positively related to customer satisfaction.*
> *H2c: Perceived service of responsiveness are positively related to customer satisfaction.*
> *H2d: Perceived service of assurance are positively related to customer satisfaction.*
> *H2e: Perceived service of empathy are positively related to customer satisfaction.*

Public and private schools, including high schools, senior vocational schools, universities, and colleges, are the subjects of this study. To ensure sampling accuracy, the sample departments should directly contact with and experience the service of ITS providers. Thus, the office of student affairs, office of academic affairs, accounting office, personnel office, and computer center were mainly involved in this study. Teachers and administration staff in those departments were the sampling subjects who completed the questionnaires. The questionnaires were issued personally and randomly to the teachers and administration staff and were collected after completion. The questionnaire framework was established based on the five dimensions proposed by Parasuraman et al. (1988), which are tangibility, reliability, responsiveness, assurance, and empathy. By referring the 22 items of the SERVQUAL scale and the measurement model of IT service quality of the companies proposed by Huang (2004), the related items that measure the quality of IT outsourcing services were developed to complete the questionnaire on "information technology outsourcing services." For each item, a Likert scale was used with five levels, namely, "Very Important," "Important," "Moderately Important," "Slightly Important," "Not Important," or "Dissatisfied," "Neutral," "Satisfied," and "Very Satisfied." A higher score indicates that customers attach greater importance to the item and have higher expectations.

4. Research Analysis

The study subjects were mainly public and private schools, including high schools, senior vocational schools, universities, and colleges. One-hundred and twenty questionnaires were issued, and 106 were collected. After excluding the five incomplete questionnaires, the effective response rate was 84.16%. The majority of respondents were aged 41 to 50 years and accounted for 32.7% of the total. The proportion of respondents with university degrees was 50.5%-the highest in terms of educational background. The percentage of respondents in non-IT departments was 87.1%, with 31.7% having worked for the school for more than 21 years-the highest proportion. Regarding job positions, the majority of respondents at 55.4% were administration staff.

4.1 Reliability and Validity Analysis

The Cronbach's α of expected service and perceived service constructs indicated a reasonable level of reliability (α>0.70) (Huang, 2004), revealing adequate internal consistency (Table 1). The factor loadings for all items exceeded 0.6 and indicated that the individual items also had discriminant validity.

Table 1: Reliability analysis

Construct	Items	Cronbach's α	
		Expected service	Perceived service
Tangibles	6	0.809	0.902
Reliability	4	0.738	0.895
Respon-siveness	5	0.890	0.914
Assurance	5	0.876	0.921
Empathy	7	0.881	0.936

4.2 Pearson Correlation Analysis

The Pearson correlation coefficient (PCC) was utilized to obtain the correlation between "service experience" and "overall satisfaction," and the result was shown in Table 2. The result indicates that the PCC between service experience in each dimension and overall satisfaction reached a significance level. The degrees of correlation are different with various intensities of PCCs. When a PCC range is 0.70–0.99, a strong correlation exists; when a PCC range is 0.40–0.69, a moderate correlation exists. Thus, the service experiences in five dimensions all have strong positive correlations with overall satisfaction. Therefore, if customers provide higher scores on "service experience-tangibility," "service experience-reliability," "service experience-responsiveness," "service experience-assurance," and "service experi-

ence-empathy," they also have higher "overall satisfaction." Thus, H2a–H2e were verified.

Table 2: Pearson Correlation Analysis

Construct	PTS	PRLS	PRPS	PAS	PES	CS
Perceived tangibles service (PTS)	1					
Perceived reliability service (PRLS)	0.792**	1				
Perceived Responsiveness Service (PRPS)	0.758**	0.870**	1			
Perceived Assurance service (PAS)	0.679**	0.852**	0.882**	1		
Perceived empathy service (PES)	0.763**	0.797**	0.875**	0.857**	1	
Customer Satisfaction (CS)	0.767**	0.794**	0.859**	0.792**	0.837**	1

** $P < 0.01$, * $P < 0.05$

4.3 Service Quality analysis

There were significant differences between expected service and perceived service of tangibles, reliability, responsiveness, assurance and empathy in Table 3. The mean of expected service (4.5) was higher than perceived service (4). All service quality constructs of expected service are higher than perceived service. The means of perceived tangibles and empathy services (M<4) showed that they need to being improved to decrease the GAP5 differences.

Table 3. The Differences between Expected Service and Perceived Service

Construct	Expected service		Perceived service		t-value	p-value
	Mean	Standard Deviation	Mean	Standard Deviation		
Tangibles	4.5624	0.42144	3.8943	0.61625	9.758	0.000***
Reliability	4.5866	0.41297	4.0371	0.67951	7.550	0.000***
Responsiveness	4.4752	0.48071	4.0040	0.71273	6.187	0.000***
Assurance	4.5188	0.47090	4.1485	0.62074	5.365	0.000***
Empathy	4.3464	0.47405	3.9461	0.68560	5.369	0.000***
Total Mean	4.4979	0.09478	4.0060	0.09662	9.136	0.001**

The order of expected and perceived service quality had significant differences in Table 4. Reliability (4.59) is the most expected service, followed by tangibles (4.56), assurance (4.52), responsiveness (4.48) and empathy (4.35). Assurance (4.15) is the most perceived service, followed by reliability (4.04), responsiveness (4.00), empathy (3.95) and tangibles (3.89). The information technology providers should focus on the differences between expected service quality and perceived service quality.

Table 4: Mean and Standard Deviation Analysis of Service Quality Constructs

Construct	Expected service			Perceived service		
	Mean	Standard Deviation	Order	Mean	Standard Deviation	Order
Reliability	4.59	0.41	1	4.04	0.68	2
Tangibles	4.56	0.42	2	3.89	0.62	5
Assurance	4.52	0.47	3	4.15	0.62	1
Responsiveness	4.48	0.48	4	4.00	0.71	3
Empathy	4.35	0.47	5	3.95	0.69	4
Total Mean	4.50	0.45		4.00	0.66	

5. Conclusion

5.1 Schools provide the highest reliability scores in terms of service expectation on IT outsourcing companies

According to the data analysis results, schools generally have very high expectations of the service quality of IT outsourcing companies. Such expectations indicated that respondents attached significant importance to ITS quality and hoped for an ITS provider that can provide relatively high quality. According to the mean data, respondents thought that "reliability" was the most important. All of the scores on the four items of "reliability" were in the top five in the service expectation aspect, demonstrating that for providers to quickly identify the causes of problems and solve problems in the shortest time was fairly important. Moreover, "tangibility" had the second highest score, indicating that the respondents also attached importance to network facilities with satisfactory performance and computers with high stability, as provided by IT companies. Thus, IT companies should provide channels for engineers and technicians to pursue further education to improve information tech-

nologies. Given the improvement in skills, IT staff can quickly and effectively identify causes of problems on campus and solve problems. Additionally, IT companies should provide stable and reliable network facilities and computers. By doing so, the overall IT operation on campus will be significantly improved and achieve the expected service quality.

5.2 Schools give the lowest scores to tangibility in terms of service experience

Regarding service experience, the scores for "tangibility" and "empathy" did not achieve four points, which represents satisfaction. The dimension of "tangibility" had the lowest scores, and four items in this dimension represented the five bottom items. In particular, scores on the items "provided network facilities with satisfactory performance" and "maintenance and update services for software and hardware" indicated that IT companies are deficient in tangible services. The scores for "assurance" were the highest for service experience, accounting for four out of the top five items. In particular, the high scores on "the staff had a serious attitude during services" and "being very polite to you during services" showed that schools most favored the work attitudes and performances of the service staff.

5.3 A significant gap exists between service expectation on IT outsourcing companies and customer experience

Regarding service quality, gaps were found in all dimensions, demonstrating the gap between service expectation and service experience for which the expectation exceeded the experience. This finding indicates that the five gaps proposed in the PZB service model are present in existing services. The gap between "tangibility" and "reliability" was the largest. Thus, IT companies should prioritize proactively improving network facilities and providing stable computers. In addition, they should help engineers and technicians improve their skills. Moreover, the cause of problems may be the allocation of labor. If so, companies should make improvements as soon as possible to effectively and quickly solve problems in schools. Moreover, the gaps in other dimensions of service quality should not be ignored, and IT companies should make improvements in these dimensions. Only by doing so can IT companies narrow the gaps in service quality.

5.4 IT companies should attach importance to tangible service quality

The term "tangibility" had the lowest scores in service experience but the second

highest scores in service expectation. Thus, IT companies should proactively improve network facilities, provide stable computers, and regularly update software and hardware. Such actions can give schools satisfactory computer equipment and network environments, and the gaps in service quality can be filled. Moreover, "tangibility" should be the focus of services provided by IT companies and be given the highest priority. However, schools may face financial problems. Thus, they cannot purchase more stable IT facilities, which has a negative impact on the stability of computers, networks, and even IT systems, and may cause a relatively large gap to occur.

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