Journal of Business Economics and Management

2008
9(1): 33–45

# SERVICE QUALITY ASSESSMENT IN A GREEK HIGHER EDUCATION INSTITUTE

**Costas Zafiropoulos[1], Vasiliki Vrana[2]**

*[1]Department of International and European Studies, University of Macedonia,*
*156, Egnatia str., Thessaloniki 54006, Greece*
*E-mail: Greece,kz@uom.gr*
*[2]Department of Business Administration, Technological Education Institute of Serres,*
*Terma Magnesias, Serres 62124, Greece*
*E-mail: v_vrana@otenet.gr*

*Received 13 February 2007; accepted 24 October 2007*

**Abstract.** Education service quality, even though it has become a major issue in higher education worldwide, in Greece it has gained attention only in the last few years. The paper analyzes how students and staff shape opinion about quality of education in a HE institute in Greece. This is one of the few analyses of the perceptions about quality of educational services, viewed both by students and staff of Higher Education Institute in Greece. The study uses the SERVQUAL instrument, adjusted in the educational context. It finds the gaps within students' and staff's attitudes and reveals possible differences between students' and staff's views. Gaps exist among some students' attitudes regarding perceived and expected quality. Staff presents greater gaps than students in every SERVQUAL dimension. Although staff's scores about perceived and expected quality differentiate significantly from students' scores, no statistically significant difference exists regarding the final SERVQUAL scores. The SERVQUAL instrument presents high reliability indices, however its validity is questioned. The issue has important strategic and managerial implications because it relates to the ability of the institution to bridge staff's and student's attitudes. Although SERVQUAL presents some limitations regarding applicability it still may be used as a complementary research instrument for assessing service quality. In the educational context SERVQUAL can be used to reveal differentiation among views of the key stakeholders, such as students and staff. Managers should take steps to ensure that both parts form a realistic view of the educational process.

**Keywords:** service quality, higher education, SERVQUAL, students, staff, gaps, Greece.

## 1. Introduction

The search of quality has become an important consumer trend (Parasuraman *et al.* 1985, 1988) and a whole industry centred on the measurement of a consumer and perceived quality satisfaction has arisen (Berry *et al.* 1988). The nineties can be described as a "decade of heightened interest in quality" (Srikanthan 1999). The term "quality" has been defined from different perspectives and orientations (Shaney *et al.* 2004) and according to Tapiero (1996) depends on the person making the definition, the measures applied and the context within which it is considered. "Quality is excellence", "quality is value", "quality is conformance to specifications" (Pariseau and McDaniel 1997) "quality is fitness for use" (Juran and Gryna 1988), "quality is conformance to requirements" (Crosby 1979), "defect avoidance" (Crosby 1984), and "meeting and/or exceeding customers expectations", claimed Parasuraman *et al*. 1985). Many of the well-known definitions of quality emphasize the relationship between quality and a customer's need and satisfaction (Zafiropoulos *et al*. 2005). Petruzzellis *et al*. (2006: 351) stated "the higher the service quality the more satisfied the customers". In that way, satisfaction is based on customer's expectations and perception of service quality (Christou and Sigala 2002; Ekinci 2004; Sigala 2004a, b).

There is the notion that a "service company is actually defined by its service quality" (Berry *et al*. 1988) and according to Christou and Sigala (2002) service quality was initially considered primarily as a problem to be solved, encountered mainly at the tactical level, but during the last decade, the views of quality of the service firms have been considerably modified. Reisinger (2001) claimed that the difficulty of clearly defining service quality is greatly influenced by its subjective nature. However, Lewis and Booms (1983: 100) defined service quality as a "…measure of how well the service level delivered matches the customer's expectations".

Instruments for measuring service quality have been developed and validated, despite the fact that service quality is more difficult to be measured than goods quality (Parasuraman *et al*. 1985). According to Christou and Sigala (2002) there exist numerous approaches

to explain the nature of service quality and the main work in the field identified two major dimensions in quality: that of the service offering, as perceived by the service provider, and that of the received service, as perceived by the guest (Nightingale 1985; Jones 1989). In this vein, Parasuraman *et al*. (1985), developed the "gap model of service quality" and proposed SERVQUAL as an instrument to measure service quality.

Higher education is a service since it exhibits all the classical features of services: it is intangible and heterogeneous, meets the criterion of inseparability by being produced and consumed at the same time, satisfies the perishability criterion and assumes the students' participation in the delivery process (Cuthbert 1996a). The concepts of service quality are therefore directly applicable to higher education.

Athiyainan and O'Donnell (1994) highlighted that higher education institutions seeking to assess quality must first identify the institutional characteristics that are most valued by its clients and then measure the clients' perception of the institution performance against these characteristics. This raises the issue of "who is the customer in education". According to Kara and DeShields (2004) educational institutions have many customers: students, staff, faculty, alumni, donors, and others. Hill (1995) suggests the student as the primary consumer in higher education. Madu and Kuei (1993) claimed that the university views the students as their primary customers who receive the educational services, parents as customers who pay for their children's education, corporations as customers who hire the students, and faculty members as customers who teach students the knowledge needed to perform the job. Rowley (1997), on the other hand, advises that the attempt to measure quality in general terms should take into account all stakeholders' perspectives, which include students, parents, staff, employers, business and legislators. In order to improve quality services to these customers, we must first of all understand their needs and in order to understand their needs, we must in turn understand the quality attributes embraced by the customers. People perceive quality differently (Chua 2004).

Higher education institutes are increasingly attracting more attention to service quality mainly due to the fact that there is a social requirement for quality evaluation in education. In many countries this requirement is expressed directly through the establishment of independent quality assurance bodies, which place emphasis on students' experience as one of the assessment criteria. In other countries the social requirement for improvement in education is often expressed indirectly. In Greece, for example (where the national system for quality assurance is just newly founded) the Ministry of National Education and Religious Affairs has granted higher education institutions a number of programs in which quality evaluation is an integral part. Also some institutions establish independent quality assurance bodies and examine students' perceptions of the effectiveness of different phases of their studies (Christou 1999), for example the Supervised Work Experience (Christou 2001). Technological Education Institute (T.E.I.) of Serres has been granted a number of curriculum reform programs that include quality evaluation as an indispensable activity. In the framework of these curriculum reform programs, the academic departments of T.E.I. of Serres (TEIS) have used a number of evaluation instruments.

In this paper we present the implementation of SERVQUAL in TEIS. Questionnaires were administered both to the undergraduate students of all the departments and the staff. The study explores the applicability of the instrument in the specific educational context, while the comparison of scores produced by the instrument finds the gaps in students' attitudes, in staff's attitudes and the gap between students' and staff's attitudes and reveals possible differences.

## 2. Measuring quality in higher education

The research on quality in higher education concludes that not a single workable definition of quality is possible. Quality is "....a relative concept, meaningful only from the perspective of those judging it at the time" (Higher Education Council 1992: 3). Tam (2001) also mentioned that, quality in higher education is a "relative concept", with respect to the stakeholders in higher education and the circumstances in which it is involved. In other words, quality means different things to different people as well as the same person may adopt different conceptualizations at different moments (Zafiropoulos *et al*. 2005). However, Sahney *et al*. (2004) highlighted that definitions of "quality in education" follow the general definitions of quality. The term "quality in education" has been defined as "conformance of education output to planned goals, specifications and requirements" (Crosby 1979); "defect avoidance in the education process" (Crosby 1979) "excellence in education" (Peters and Waterman 1982) and "meeting or exceeding customer's expectations of education" (Parasuraman *et al*. 1985) and finally "fitness of educational outcome and experience for use" (Juran and Gryna 1988).

Delivering quality service has become an important goal for most Higher Education Institutions (Alves 2006). Universities and faculties strive to provide high quality services because they need to compete for their students (Faganel and Macur 2005) and have become increasingly interested in establishing quality management systems in response to the demands imposed by a complex, uncertain environment (Athiyaman and O'Donnell 1994; Jenkins 1994; Sallis and Hingley 1991). Sigala and Baum (2003) mentioned that it becomes even more difficult to attract students, since new generation students have more influence and greater awareness as consumers, becoming more interactive and selective as regards their future and Ford *et al*. (1999) suggested that institutions need to better understand the nature and quality of the service offered, because of the high competitive intensity surrounding business-related courses. Oldfield and Baron (2000: 86) claimed that "institutions should address the issue of quality, not only through the traditional routes of accreditation and course review, students' feedback questionnaires on the quality of course delivery and teaching, but also through evaluating what students themselves consider to be elements in service quality". Ford *et al.* (1999) found out the attributes that contribute towards an excellent university. The most important are: reputation, career opportunities, program issues, physical aspects, and location and may become the basis where universities have to focus their efforts. Vidal *et al*. (2003) found out that "guidance services", in "professional", "academic" and "personal" matters play an integral part of the education process, while Adee (1997) suggested that several 'university characteristics' can help to explain the perceived quality among students, like competent teaching, the availability of staff for students' consultation, library services, computer facilities, recreational activities, class sizes, level and difficulty of the subject content, and students' workload.

Measuring the quality of their services is therefore an important task, especially for those institutions that give a feedback on the dimensions of quality, because it offers them the possibility of significant competitive advantages (Faganel and Macur 2005). Baig *et al*. (2006) highlighted the need for a proper framework of quality in higher education due to the growing demand for quality. However, listening to and facilitating people to participate in decision making will most probably help a positive result (Oldfield *et al.* 2000).

Regarding instruments used for measuring service quality in higher education, Firdaus (2006b: 32) claimed "the emergence of diverse instruments of measurement such as SERVQUAL (Parasuraman *et al*. 1988), SERVPERF (Cronin and Taylor 1992) and evaluated performance (EP) (Teas 1993a, b) has contributed enormously to the development in the study of service quality". The SERVQUAL compares the perceptions of the service received with expectations, and there is a set of five gaps regarding the executive perceptions of service quality and the tasks associated with service delivery (Parasuraman *et al*. 1985; Zeithaml *et al*. 1986, 1990). The SERVPERF uses only the perceptions of service quality. "Service quality should be measured as an attitude" claimed (Cronin and Taylor 1992: 64). In this vein, Cronin and Taylor (1992) developed and tested an alternative instrument which measured the performance only, the SERVPERF. On the other hand, EP scale measures the gap between perceived performance and the ideal amount of a feature rather than the customer's expectations (Teas 1993a, b). Firdaus (2006a) proposed HEdPERF (Higher Education PERFormance-only), a new and more comprehensive performance-based measuring scale that attempts to capture the authentic determinants of service quality within higher education sector. The 41-item instrument has been empirically tested for unidimensionality, reliability and validity using both exploratory and confirmatory factor analysis. Therefore, the primary question is directed at the measurement of service quality construct within a single, empirical study utilising customers of a single industry, namely higher education.

## 3. Use of the SERVQUAL in higher education

The service quality model conceptualized by Parasuraman *et al.* (1985), also known as the PZB model or the SERVQUAL instrument, has provided the framework by which extensive research has been done in many service industries. The model was tested for reliability and validity in multiple service sector settings and it was considered to be a concise multiple-item scale with good reliability in several contexts (Zafiropoulos *et al*. 2005). The SERVQUAL model has also mainly been used for research on service quality on the Internet (Sigala 2004b; Sigala and Sakellaridis 2004). There have been quite many attempts to apply SERVQUAL in the academic environment, despite the fact that the language and some of its items involved embody the philosophy of the business world (Soutar and McNeil 1996).

Pariseau and McDaniel (1997) used SERVQUAL to measure quality in two small private business schools, using the same questionnaire for both faculty and students. The research revealed that students and faculty

may have different perspectives on quality of education, a situation that introduces difficulties as far as the direction of improvement and leads to mutual misunderstanding. Cuthbert (1996a) also proposed SERVQUAL as an appropriate instrument for service quality measurement in the context of higher education for various reasons. However, when Cuthbert (1996b) used SERVQUAL, the results obtained did not turn up to be as good outcomes as expected: although the mean scores for perceptions on each of the dimensions (except tangibles) exceeded the mean expectations score, further analysis on the median and the mode revealed that there might be comprehension difficulties, due to unsuitable words and negative clauses.

Ruby (1998) demonstrated how the use of SERVQUAL, can be used to study students' satisfaction with four areas of support services hypothetically related to enrolment management (academic records, admissions, career services, and financial aid). He claimed (p. 339) "this model may not suit all areas of education it holds promise as a means for evaluating the quality of selected support services". Slade *et al*. (2000) also used the SERVQUAL instrument in order to capture perceptions of service quality of students who leave an institution before completing their studies, and those who stay to finish.

Oldfield and Baron (2000) investigated students' perceptions of service quality in higher education, particularly of the elements not directly involved with the content and delivery of course units, using a performance-only adaptation of the SERVQUAL research instrument. The findings suggest that students' perceived service quality has three dimensions: "requisite elements", which are essential to enable students to fulfil their study obligations; "acceptable elements", which are desirable but not essential to students; and "functional elements'", which are of a practical or utilitarian nature. A comparison of perceptions of service quality between the first and final year students suggests that perceptions of service quality elements change over a period of study, with "acceptable elements" having increasing importance.

O'Neill (2003) using SERVQUAL, tried to understand the influence of time on students' perceptions of service quality running a longitudinal study. The sample comprised the first year students in two stages: a) prior to orientation process and b) after one month and he discovered that students' perceptions of quality had deteriorated – suggesting service quality in higher education may be influenced by time. This work confirmed earlier research by O'Neill and Palmer (2001).

Chua (2004) used SERVQUAL to assess the attitudes of university stakeholders (including students, parents, faculty members and employers). The findings revealed that the dimensions of SERVQUAL are primarily related to the "process" stage of the "Input–Process–Output framework". Sherry *et al*. (2004), on the other hand, used SERVQUAL to assess the perceptions of international students (as opposed to local students), with intention to serve better the legitimate needs and expectations of services offered to this group of students. They conclude that SERVQUAL offered useful insights and was a good starting point to measure education quality, but a more in-depth analysis of the areas of concern would be needed.

"Customer service and quality are driving forces in the business community. As higher educational institutions tussle for competitive advantage and high service quality, the evaluation of educational service quality is essential to provide motivation for and to give feedback on the effectiveness of educational plans and implementation" claimed Tan and Kek (2004: 17). In their research they presented an enhanced approach to using SERVQUAL for measuring students' satisfaction. The research involves the use of factors concerning students' services that are queried and surveyed using the SERVQUAL methodology. The proposed instrument was tested at two local universities.

Gibbs's (2004) primary objective was to design and implement the way of measuring the quality of the courses offered by a university department, in order to highlight areas in which additional funds need to be allocated to improve performance. A questionnaire was designed, based on the SERVQUAL instrument, to measure the difference between students' expectations and perceptions of the quality of service delivery. The results indicate areas where the university is failing to meet students' expectations and provide a framework for managers to use and redirect resources. In addition, measurement of customers' perceptions of service quality can be used over a period of time to monitor the impact of quality improvement activities initiated through an organization strategic planning process.

The SERVQUAL methodology was also applied to identify the gap between customers' expectations and perceptions of the actual service received within selected educational institutions in India. The quality function deployment technique was then used to identify the set of minimum design characteristics/quality components that meet the requirements of the students as the customers of the educational system. (Sahney *et al*. 2004)

In theory there are 5 most important dimensions of service quality. Faganel and Macur (2005) developed a questionnaire with 18 items describing these 5 dimensions of quality and gave it to focus groups of students. The analysis, which included students and also professors, was carried out in the Faculty of management of Koper. SERVQUAL theory was challenged when those 18 items were examined by using factor analysis. In that way the authors could establish the most important determinants of quality for students and professors of this faculty.

Zhao *et al.* (2006) started with elaborating the great significance of carrying out the SERVQUAL instrument in Chinese educational institutions. They based on the brief introduction and related review of SERVQUAL instrument, criteria of it are re-designed in order to be suitable to evaluate the service quality of Chinese higher education. The data obtained from the utilization of it were analyzed and then applied in a more effective, comprehensive way. As a result, a new quantifying was provided.

A modified version of the SERVQUAL instrument was utilized by Adisornprasert (2001) in an educational study setting. This modified model was used by Bezjian and Griego (2006) in order to capture Generation Y attention in terms of the quality of a business school. A part of the questionnaire looked at the respondent quality preferences for selecting an MBA, but the majority of survey questions dealt with the SERVQUAL concepts outlined by Adisornprasert (2001).

Barnes (2007) used a modified SERVQUAL instrument to investigate expectations and perceptions of service quality among a sample of post-graduate Chinese students at a leading business and management school in the UK. The research findings suggest that the instrument is suitable to use in a Chinese and post-graduate context, and the statements load on the five original SERVQUAL dimensions.

## 4. Methodology

The study aims at investigating the perception of what, on the one hand, students and, on the other hand, staff, consider an "excellent university", that means a University that provides a good quality of education and services, which represent students' main choice criteria.

The standardized SERVQUAL instrument was used (Pariseau and McDaniel 1997), in which only the language adjustment was made, in order to fit in the academic environment. It is constructed from 22 items, which form five dimensions, namely:

- Assurance: Knowledge and courtesy of employees and their ability to inspire trust and confidence,
- Responsiveness: Willingness to help customers and provide prompt service
- Empathy: Caring, individualized attention the firm provides its customers
- Reliability: Ability to perform the promised service dependably and accurately
- Tangibles: Condition of facilities, equipment, and appearance of personnel.

Students and staff were asked to rank their perception and expectation in relation to service quality with a five-point Likert scale, thus measuring respectively their Faculty and University and the ideal Faculty and University service quality.

By subtracting perceived minus expected rating the net satisfaction can be estimated from the quality for each student or faculty member. SERVQUAL dimensions are the means of these differences for specific questions.

The field research took place during November 2004 at the Technological Education Institute of Serres, Greece. A total of 70 questionnaires were administered to the staff. Also 335 questionnaires were administered to the undergraduate students of all the departments of the institute. The sample was designed to include as many students with higher-class level as possible. In this way it was expected that students would have had enough time during their studies to form their perceptions regarding quality. Proportionate multistage sampling was used to capture various departments size differences (D'Uggento *et al.* 2006; Fragidis *et al.* 2005; Zafiropoulos 2006; Zafiropoulos *et al.* 2005; Zafiropoulos *et al.* 2007).

## 5. Findings

### 5.1. Comparative results for staff and students

Table 1 presents the student sample profile. The Departments of Business Administration and Accounting are the densest, since they account for nearly one half of the students population. Information and Communication Science Department and especially Topography and Surveying Department are two newly founded departments and hence their students' attitudes may differ from the others who attend more stabilized departments. Also Departments of Mechanical and Civil Engineering may reflect differences in their students' attitudes because of differences in infrastructure, laboratories, study practices, etc.

Cronbach's Alphas were used to test the reliability of the SERVQUAL dimensions (Table 2). All the dimensions produced high alphas, in most cases exceeding 0.70, with the exception of Assurance for students, which produced a value of 0.65. Alphas are higher for the staff. Hence SERVQUAL instrument is considered to be reliable especially in the case of staff. This is not always the case in the research that employed the SERVQUAL instrument. For example Cuthbert (1996b) calculated Cronbach's Alphas for his revised version of SERVQUAL to be about 0.50 or less. Although Cronbach's Alphas offer some support for reliability of the scales, further analyses should be performed for testing the validity of the instrument.

**Table 1.** Students sample description

| | | Frequency | Percent % |
|---|---|---|---|
| Sex | Male | 180 | 53.73 |
| | Female | 155 | 46.27 |
| Class level | Freshman | 11 | 3.28 |
| | Sophomore | 50 | 14.93 |
| | Junior | 94 | 28.06 |
| | Senior | 180 | 53.73 |
| Department | Business Administration | 68 | 20.30 |
| | Accounting | 83 | 24.78 |
| | Mechanical Engineering | 54 | 16.12 |
| | Civil Engineering | 57 | 17.01 |
| | Information and Communication Science | 44 | 13.13 |
| | Topography and Surveying | 29 | 8.66 |
| | Total | 335 | 100.0 |

**Table 2.** Cronbach's alphas of the SERVQUAL dimensions

| Dimensions | Cronbach's Alpha (students) | Cronbach's Alpha (staff) |
|---|---|---|
| Tangibles | .70 | .75 |
| Reliability | .75 | .84 |
| Responsiveness | .70 | .81 |
| Assurance | .65 | .74 |
| Empathy | .79 | .82 |

At first it is interesting to notice that all SERVQUAL dimensions are intercorrelated having not only high but also significant correlation coefficients (Table 3). According to Zeithaml *et al.* (1990: 24–25) this should not be the case since the construction of the original instrument has already taken intercorrelations into account. The five SERVQUAL dimensions produced after consolidation of some dimensions should present minimum intercorrelations. On the contrary, our findings regarded as part of a confirmatory analysis, suggest that there is an overlapping among dimensions and possibly respondents attribute multiple meanings to each one, have no clear understanding of their meaning and in any case the implementation of SERVQUAL to educational settings deviates significantly from its original purpose and meaning. For example, Table 3 reveals that since dimensions are intercorrelated they may be associated with each other. They may curry relative meanings to the students and hence in this way they may measure relative issues. In this sense it might be sensible to incorporate some dimensions to others, resulting in this way to a different instrument from SERVQUAL.

**Table 3.** Pearson correlation coefficients among SERVQUAL dimensions

| Students | Reliability | Responsiveness | Assurance | Empathy |
|---|---|---|---|---|
| Tangibles | .576(*) | .542(*) | .523(*) | .558(*) |
| Reliability | | .719(*) | .621(*) | .699(*) |
| Responsiveness | | | .629(*) | .660(*) |
| Assurance | | | | .654(*) |
| Staff | | | | |
| Tangibles | .582(**) | .510(**) | .472(**) | .526(**) |
| Reliability | | .836(**) | .811(**) | .762(**) |
| Responsiveness | | | .743(**) | .773(**) |
| Assurance | | | | .774(**) |

(*: $p< 0.05$, **: $p<0.01$)

Table 4 presents the mean SERVQUAL dimension scores along with mean dimension scores for the Expected and Perceived quality. For the students, SERVQUAL scores demonstrate that Perceived Reliability, Assurance and Empathy deviate from the relative expected values more than Tangibles and Responsiveness do. Assurance, Empathy and Reliability scores exceed one unit. On the other hand, all dimensions scores ex-

**Table 4.** Mean scores of SERVQUAL dimensions

| Students | Expected | | Perceived | | SERVQUAL dimensions | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| Tangibles | 3.5 | .93 | 2.6 | .82 | –.9 | 1.15 |
| Reliability | 3.8 | .86 | 2.7 | .76 | –1.1 | .98 |
| Responsiveness | 3.8 | .86 | 2.8 | .78 | –.9 | 1.00 |
| Assurance | 3.8 | .84 | 2.7 | .80 | –1.1 | 1.04 |
| Empathy | 3.4 | .95 | 2.3 | .78 | –1.1 | 1.13 |
| Staff | Expected | | Perceived | | SERVQUAL dimensions | |
| | Mean | SD | Mean | SD | Mean | SD |
| Tangibles | 4.1 | .67 | 3.1 | .73 | –1.0 | 1.08 |
| Reliability | 4.5 | .54 | 3.2 | .85 | –1.2 | .95 |
| Responsiveness | 4.3 | .52 | 3.3 | .78 | –1.0 | .96 |
| Assurance | 4.5 | .46 | 3.2 | .75 | –1.2 | .88 |
| Empathy | 4.1 | .66 | 3.1 | .79 | –1.0 | .95 |

ceed a unit for the staff. It seems therefore, that three dimensions are the ones that the institute suffers more regarding service quality when we take into consideration students' views while staff presents more and bigger gaps than the students do. The gaps between expected and perceived quality are higher for staff for all dimensions except Empathy. In other words scores calculated as the difference between perceived minus expected quality are bigger in absolute values for staff and only students' score for empathy is smaller than for staff. This pattern is consistent with the one of Pariseau and McDaniel (1997).

Reliability and assurance present the biggest scores for staff while assurance and empathy are the biggest for the students. Overall, Assurance presents a gap between an expected and perceived quality for both groups.

Although SERVQUAL scores seem to be differentiated between students and staff, further analysis demonstrates that these differentiations are not statistically significant. Table 5 presents the findings of a series of independent samples t-tests. The first five rows of the table demonstrate that there is not any significant difference regarding SERVQUAL final scores. However, if we proceed to the analysis of expected and perceived values independently we can easily distinguish that statistically significant differences exist in all the dimensions between students and staff (Table 5). Staff's views are significantly higher that students'. Staff perceive quality value higher that students do, but they also have higher expectations from the ideal university. When subtracting these scores the gap between staff and students regarding SERVQUAL scores vanishes.

**Table 5.** Independent samples of T-tests for the five SERVQUAL dimensions (students-staff)

| | t | p |
|---|---|---|
| Assurance | 1.140 | .255 |
| Responsiveness | .592 | .554 |
| Empathy | –.157 | .876 |
| Reliability | 1.967 | .050 |
| Tangibles | .452 | .652 |
| | | |
| Expected assurance | –9.302 | .000 |
| Expected responsiveness | –7.177 | .000 |
| Expected empathy | –8.050 | .000 |
| Expected reliability | –9.252 | .000 |
| Expected tangibles | –5.500 | .000 |
| | | |
| Perceived assurance | –4.928 | .000 |
| Perceived responsiveness | –4.477 | .000 |
| Perceived empathy | –7.107 | .000 |
| Perceived reliability | –4.447 | .000 |
| Perceived tangibles | –4.083 | .000 |

### 5.2. The effect of demographic and educational issues on forming students' attitudes

Score differences may occur because of different departmental origin of the students. This section attempts to explore differences that may occur because of these educational and demographic characteristics as well. Four independent variables are used:

a) Gender. Gender may affect educational choices of the students and it may have some impact on perceived and on expected education quality as well.

b) Faculty. There are two faculties: the faculty of Technology and the faculty of Administration. The first consists of Departments of Mechanical Engineering, Civil Engineering, Information and Communication Science, Topography and Surveying, and the second consists of the Departments of Business Administration and Accounting. Different Faculties may reflect different attitudes of the students because they experience different class and laboratories conditions or they experience different lecture and assistance styles.

c) Department age. TEI of Serres initially consisted of Departments of Mechanical engineering, Civil engineering, Business Administration and Accounting. Recently two departments have been established: Information and Communication Science, and Topography and Surveying. The new departments were very active in engaging new staff and laboratories equipment and also constructed their curriculum from scratch, placing emphasis on newly developed educational methods. On the other hand, the more conventional and older departments although having made severe changes to their curricula due to an extended reforming program that the Ministry of Education affairs granted to them, they may have a different effect on their students' perceptions about the quality. A binary variable that distinguishes newly and formerly established departments is added in the analysis.

d) Study semester. The semester may be a significant variable because it distinguishes the young students from the older ones. Young students may experience differences in educational and administrational services of the Institute and, on the contrary to the older ones, they may have a different and even more positive attitude than the older students.

Table 6 presents the SERVQUAL scores breakdown according to a semester, faculty, age of the department and gender. Table 7 presents correlation coefficients between SERVQUAL dimensions and demographic/educational characteristics.

**Table 6.** The SERVQUAL dimensions scores for segments of students

| | | Assurance | Responsiveness | Empathy | Reliability | Tangibles |
|---|---|---|---|---|---|---|
| | | | Gender | | | |
| Female | Mean | –0.96 | –0.94 | –1.11 | –0.99 | –0.93 |
| | SD | 1.03 | 1.01 | 1.11 | 0.93 | 1.10 |
| Male | Mean | –1.28 | –1.05 | –1.10 | –1.11 | –1.01 |
| | SD | 1.02 | 1.00 | 1.16 | 1.02 | 1.20 |
| | | | Faculty | | | |
| Technology | Mean | –0.99 | –0.80 | –0.93 | –0.91 | –0.85 |
| | SD | 1.03 | 1.00 | 1.20 | 1.02 | 1.22 |
| Economics | Mean | –1.30 | –1.23 | –1.29 | –1.23 | –1.11 |
| | SD | 1.03 | 0.95 | 1.03 | 0.90 | 1.05 |
| | | | Age of the department | | | |
| Formerly est. | Mean | –1.23 | –1.09 | –1.19 | –1.15 | –1.05 |
| | SD | 1.03 | 0.97 | 1.10 | 0.95 | 1.13 |
| Newly est. | Mean | –0.78 | –0.66 | –0.75 | –0.71 | –0.66 |
| | SD | 1.01 | 1.04 | 1.19 | 1.03 | 1.19 |

**Table 7.** Correlations between SERVQUAL dimensions and demographics/educational characteristics for students' sample

| | Gender[a] | Semester | Age of the Dpts[b] | Faculty[c] |
|---|---|---|---|---|
| Assurance | –.153(**) | –.121(*) | .177(**) | –.148(**) |
| Responsiveness | –.056 | –.089 | .177(**) | –.212(**) |
| Empathy | .005 | –.161(**) | .157(**) | –.157(**) |
| Reliability | –.062 | –.130(*) | .185(**) | –.166(**) |
| Tangibles | –.035 | –.112(*) | .142(**) | –.116(**) |

(a: 0 female, 1 male)
(b: 0 formerly established, 1 newly established)
(c: 0 Administration, 1 Technology)
(**: $p < 0.01$, *: $p < 0.05$)

Gender has a minor impact. It affects only Assurance since male students present lower scores and so they are more dissatisfied than female students in terms of knowledge and courtesy of staff and their ability to inspire trust and confidence. On the other hand, educational characteristics are more influential in forming SERVQUAL scores. A semester in a lesser degree and Age of the departments and Faculty in a greater degree affect nearly all the dimensions and the overall SERVQUAL score as well. Students who are closer to the graduation are less satisfied in all the dimensions and in the overall score except Responsiveness, since their correlation coefficients are negative and statistically significant at $p = 0.05$. Regarding Age of the Departments and Faculty, students of the new departments and students of Administration are more satisfied in every aspect of SERVQUAL scale, since the positive correlations are also statistically significant at $p = 0.01$. In conclusion, they are the freshmen, the students of the newly founded departments and the students of Administration Faculty who are most satisfied regarding expected and perceived quality within the educational context and by using SERVQUAL.

To make a further development in the previous analysis it is interesting to explore how all the independent variables affect the SERVQUAL dimensions jointly. Multiple linear regression models and stepwise selection of the variables are used. Table 8 presents only the independent variables which stay in the final models: Assurance is affected by Age of the departments, Gender and Faculty. However, regarding Betas we can see that Gender has the greatest effect size while Faculty has the second. Gender has the greatest impact on Responsiveness followed by Faculty. Only Faculty affects Empathy. Reliability and Tangibles as well as the overall SERVQUAL score are affected only by Age of the Departments. All the effects are in the same directions as those commented for Table 7. Overall, it is interesting to notice that Faculty and Age of the Departments are the two independent variables with major presence and impact. The specific educational institute experience differences in delivering educational services. These differences are probably greater for the newly founded departments and are reflected in students' attitudes. Also differences between faculties may reflect different levels of the alteration procedures regarding the conventional ways of delivering educational services. On the other hand, they may just reflect different ways of perception for the students of the two faculties, the students of Administration being more tolerant. To arrive at some conclusions on this matter qualitative research is suggested to explore the reasons for the dissatisfaction and the different levels of attitudes.

**Table 8.** Stepwise regressions of SERVQUAL dimensions vs. demographics and educational characteristics for students' sample

| | | B | Beta | Std. Error |
|---|---|---|---|---|
| Assurance | Constant | –.833 | | .127 |
| | Age of the Department[b] | .280 | .111 | .154 |
| | Gender[a] | –.404 | –.194 | .115 |
| | Faculty[c] | –.310 | –.149 | .132 |
| Responsiveness | Constant | –.645 | | .104 |
| | Faculty[c] | –.497 | –.247 | .112 |
| | Gender[a] | –.238 | –.118 | .112 |
| Empathy | Constant | –.930 | | .085 |
| | Faculty[c] | –.365 | –.160 | .125 |
| Reliability | Constant | –1.154 | | .060 |
| | Age of the Department[b] | .438 | .184 | .130 |
| Tangibles | Constant | –1.058 | | .072 |
| | Age of the Department[b] | .384 | .137 | .155 |

(a: 0 female, 1 male),
(b: 0 formerly established, 1 newly established),
(c: 0 Administration, 1 Technology)

Next, an effort is made to investigate how SERVQUAL dimensions are linked to students' attitudes about several educational issues. Because, as seen in Table 3, all SERVQUAL factors are intercorrelated, the analy-

sis should consider the use of a method that isolates these intecorrelations and keep only the factors that really attribute significantly to the issues. To bypass the problem of multicollinearity, stepwise linear regressions were used, taking the educational issues as the dependent variables and the SERVQUAL factors as the independent ones. Table 9 presents only the factors entered in each model and have a significant B ($p < 0.05$).

**Table 9.** Regression models of education issues vs. SERVQUAL dimensions for students' sample. Stepwise method is used

| | | B | Std. Error |
|---|---|---|---|
| Scientific adequacy and teaching capability of the staff | (Constant) | 3.566 | 0.065 |
| | Assurance | 0.253 | 0.055 |
| | Empathy | 0.111 | 0.056 |
| Behavior of the staff and capability for collaboration | (Constant) | 3.519 | 0.059 |
| | Assurance | 0.261 | 0.038 |
| Textbooks, notes and educational material quality | (Constant) | 2.868 | 0.067 |
| | Tangibles | 0.217 | 0.045 |
| Infrastructure of the establishment and laboratories equipment | (Constant) | 3.086 | 0.067 |
| | Tangibles | 0.317 | 0.045 |
| Infrastructure in teaching rooms | (Constant) | 2.962 | 0.076 |
| | Tangibles | 0.288 | 0.053 |
| Administration services | (Constant) | 2.875 | 0.097 |
| | Assurance | 0.319 | 0.063 |
| Student's dining facilities and services | (Constant) | 2.723 | 0.091 |
| Library | Empathy | 0.132 | 0.058 |
| | (Constant) | 4.130 | 0.066 |
| | Empathy | 0.092 | 0.042 |
| Sports facilities | (Constant) | 3.230 | 0.070 |
| | Tangibles | 0.096 | 0.047 |
| Cultural activities | (Constant) | 3.062 | 0.086 |
| | Assurance | 0.159 | 0.056 |
| The institute in general | (Constant) | 3.576 | 0.069 |
| | Assurance | 0.224 | 0.045 |

The first thing that strikes is that neither Responsiveness nor Reliability are considered suitable to enter. Assurance, Empathy and Tangibles are the core factors that attribute to the explanation of educational issues when all the factors are considered jointly form the beginning. Assurance attributes to Scientific adequacy and teaching capability of the staff, Behavior of the Staff, Administration services, Cultural activities, The institute in general. It is Assurance "Knowledge and courtesy of employees and their ability to inspire trust and confidence" which is connected to the issues regarding interpersonal communication.

Empathy attributes to Scientific adequacy and teaching capability of the staff, students' dining facilities and services and Library. Empathy, "Caring, individualized attention the Institute provides its students", is associated with services concerning teaching, reading, dining, that is all the major activities which enroll students, teachers and facilities, fill up the students' day and are the products of the institute care and attention to them.

Tangibles are connected with Textbooks, notes and educational material quality, Infrastructure of the establishment and laboratories equipment, Sports facilities. The links between them are obvious.

The findings and discussion of Table 9 offer some strong indications that SERVQUAL factors can, to a certain degree, adequately describe and record some major educational issues regarding our institute. Of course, the fact that not all the SERVQUAL factors are eventually used to attribute to the issues, presents some evidence that SERVQUAL is partly suitable for our case.

## 6. Conclussions

The findings reveal an existing gap in the way how students and staff regard education quality. This gap consists mainly in differentiations regarding expected and perceived quality but not in the final SERVQUAL scores, which are the differences between perceived and expected quality. Staff have greater expectations, but on the other hand, they perceive current educational services to be of a higher level. Students have lower expectations and they perceive current educational status to be of a lower level. This finding could be attributed to several causes. It may reflect the experience that the staff have gained through education, training and studying in other institutes, or through employment experience. This experience could enable staff to value both their current situation with regards to the ideal university and also their current job, placing home institute lower than the ideal but still high enough.

SERVQUAL is a valuable instrument to measure service quality. In particular, it seems to be of use for research within the educational context. Although its original purpose was to measure consumers' attitudes, previous works in the relative literature and recent practice suggest that it could fit to the educational context, since it can be used to explore differentiation in attitudes among students of different levels and faculties. SERVQUAL is the most valuable when it is used periodically to track service quality trends and when it is used in conjunction with other forms of a service quality measurement (Parasuraman *et al.* 1988). In this study SERVQUAL was used together with some items, which investigate education quality. Their association provided some indications that SERVQUAL can be effectively used to record education service quality. This should attract attention since this attempt is one of the first regarding education issues in Greece. However, SERVQUAL was originally constructed to measure consumers' views about the quality. Although it is roughly suitable for a wide range of service quality studies, neither previous other scholars' work, nor our experience during this study, suggest that only SERVQUAL as it is can be used to provide a complete and global picture regarding education quality.

Although SERVQUAL presents some limitations regarding validity or applicability it still may be used as a complementary research instrument for assessing service quality. In the educational context it can be used to reveal differentiation among views of the key stakeholders, such as students and staff. Yet, SERVQUAL can only spot the differentiations. Further and deeper analysis may reveal the causes of such differentiations while all these good efforts should lead and be accompanied by an effective strategic plan. Educational Institutes could benefit from this exploration and tracking the segments of students that the Institute needs to focus on and then make an effort to alter the conditions that provoke negative quality rankings. A qualitative research may be proved an invaluable tool for exploring the causes of the gaps. On the intervention level efforts should be made both in the direction of elevating students' expectations and improving institutional service quality, and in the direction of informing and training staff, in order to form a more realistic view. Bridging the gap between students and staff may result to certain managerial and administrative benefits, such as improvement of educational quality, improvement of job satisfaction, trust and commitment to the institute and better reputation.

## References


Adee, A. 1997. Linking student satisfaction and service quality perceptions: the case of university education, *European Journal of Marketing* 37(7): 528–535.

Adisornprasert, W. 2001. *Consumer evaluation of MBA program quality: A pre-and post-program experience comparison between American and Thai business schools*: Doctoral dissertation, United States International University, San Diego.

Alves, A. C. R. R. and Viera, A. 2006. The SERVQUAL as a marketing instrument to measure services quality in higher education institutions, in *Second International Conference: Product management – Challenges of the future*, Poznań, Poland, May 18–20.

Athiyainan, A. and O'Donnell, B. 1994. Exploring graduates' perceptions of the quality of higher education, *Journal of Institutional Research in Australasia* 3(1): 1–7.

Baig, M.; Basharat, S. and Maqsood, M. 2006. A maturity model for quality improvement in higher education, in *First International Conference on Assessing Quality in Higher Education (ICAQHE), Prosperity through Quality Education*, Lahore, 11–13 December.

Barnes, B. 2007. Analysing service quality: the case of post-graduate Chinese students, *Total Quality Management and Business Excellence* 18(3): 313–331.

Berry, L. L.; Parasuraman, A. and Zeithaml, V. A. 1988. The service-quality puzzle, *Business Horizons*, September/October.

Bezjian, V. and Griego, O. 2006. Generation Y expectations of quality in master of business administration programs, in *Christian Business Faculty Association Conference*. Available from Internet: <http://www.cbfa.org/papers/2006conf/bezjian_griego.pdf)>.

Christou, E. 1999. Hospitality management education in Greece: overview and qualitative assessment, *Tourism Management* 20(6): 683–691.

Christou, E. 2001. Supervised work experience for hospitality management students: the meat in the sandwich, in *56th International CHRIE Convention & Exhibition 25–28 July 2001*. New Orleans, U.S.A.

Christou, E. and Sigala, M. 2002. Conceptualising the measurement of service quality and TQM performance for hotels: the HOSTQUAL model, *Acta Touristica* 14(2): 140–169.

Chua, C. 2004. *Perception of Quality in Higher Education. Proceedings of the Australian Universities Quality Forum*, AUQA Occasional Publication. Available from Internet: <http://www.auqa.edu.au/auqf/2004/program/papers/Chua.pdf)>.

Cronin, J. J. and Taylor, S. A. 1992. Measuring service quality: re-examination and extension, *Journal of Marketing* 56: 55–68.

Crosby, P. B. 1979. *Quality is Free.* McGraw Hill, New York, NY.

Crosby, P. B. 1984. *Quality without Tears*. McGraw Hill, New York, NY.

Cuthbert, P. 1996b. Managing service quality in HE: is SERVQUAL the answer?, part 2, *Managing Service Quality* 6(3): 31– 35.

Cuthbert, P. 1996a. Managing service quality in HE: is SERVQUAL the answer?, part 1, *Managing Service Quality* 6(2): 211–216.

D'Uggento, A. M.; Petruzzellis, L.; Romanazzi, S.; Vrana, V. and Zafiropoulos, C. 2006. *Student satisfaction e qualità del servizio nelle università: un'analisi trasnazionale Italia-Grecia*. Convegno per la celebrazione del 120 anniversario della faculta' di economia. Universita Degli Studi di Bari, Bari 20 October 2006 Taranto 21 October 2006.

Ekinci, Y. 2004. An investigation of the determinants of customer satisfaction, *Tourism Analysis* 8: 197–203.

Faganel, A. and Macur, M. 2005. Competing through quality in higher education: the case of faculty of management Koper, Intellectual capital and knowledge management, in *Proceedings of the 5th International Conference of the Faculty of Management*, Koper.

Firdaus, A. 2006a. The development of HEdPERF: a new measuring instrument of service quality for higher education, *International Journal of Consumer Studies* 30(6): 569–581.

Firdaus, A. 2006b. Measuring service quality in higher education: HEdPERFversus SERVPERF, *Marketing Intelligence and Planning* 24(1): 31–47.

Ford, J. B.; Joseph, M. and Joseph, B. 1999. Importance-performance analysis as a strategic tool for service marketers: the case of service quality perceptions of business students in New Zealand and the USA, *The Journal of Services Marketing* 13(2): 171–182.

Fragidis, G.; Zafiropoulos, C.; Paschaloudis, D. and Vrana, V. 2005. A longitudinal study on how students shape opinions about quality of education: Research outcomes and management implications, in *Paper presented in the 8th Toulon-Verona Conference*, *QUALITY IN SERVICES*, Palermo Italy, September 2007.

Gibbs, V. 2004. A study of consumer expectations and perceptions in undergraduate higher education, *Journal of Diagnostic Radiography and Imaging* 5(2): 69–78.

Higher Education Council. 1992. The Quality of Higher Education, Queanbeyan, NSW: National Board of Employment, Education and Training.

Hill, F. M. 1995. Managing service quality in higher education: the role of the student as primary consumer, *Quality Assurance in Education* 3(3): 10–21.

Jenkins, R. L. 1994. The MBA Program: yardstick for quality, *Survey of Business,* Summer: 21–37.

Jones, P. 1989. *Management in Service Industries*. London, Pitman.

Juran, J. M. and Gryna, F. M. 1988. *Juran's Quality Control Handbook*. Jr (Eds.) McGraw-Hill, New York, NY.

Kara, A. and DeShields, O. 2004. *Business Student Satisfaction, Intentions and Retention in Higher Education: An Empirical Investigation*, *MEQ* 3, Fall. Available from Internet: <http://www.elmarlist.org/MEQ_Vol_3/student_satisfaction.pdf)>.

Lewis, R. C. and Booms, B. H. 1983. The marketing aspects of service quality, in Berry, L., Shostack, G. and Upah, G. (Eds), *Emerging Perspectives on Services Marketing, American Marketing*, Chicago, IL: 99–107.

Madu, C. N. and Kuei, C-H. 1993. Dimensions of quality teaching in higher institutions, *Total Quality Management* 4(3): 325–338.

Nightingale, M. 1985. The hospitality industry: defining quality for a quality assurance programme – a study of perceptions, *Service Industries Journal* 5(1): 9–24.

O'Neill, M. and Palmer, A. 2001. Survey timing and consumer perceptions of service quality: an overview of empirical evidence, *Managing Service Quality* 11(3): 182–190.

Oldfield, B. and Baron, S. 2000. Student perceptions of service quality, *Quality Assurance in Education* 8(2): 85–95.

O'Neill, M. 2003. The influence of time on students' perceptions of service quality: The need for longitudinal measures, *Journal of Educational Administration* 41(3): 310–325.

Parasuraman, A.; Zeithaml, V. A. and Berry, L. L. 1985. A conceptual model of service quality and its implications for future research, *Journal of Marketing* 49(4): 41–50.

Parasuraman, A.; Zeithaml, V. A. and Berry, L. L. 1988. Communication and control processes in the delivery of service quality, *Journal of Marketing* 52(2): 35–48.

Pariseau, S. and McDaniel, J. R. 1997. Assessing service quality in schools of business, *International Journal of Quality and Reliability Management* 14(3): 204–218.

Peters, T. J. and Waterman, R. H. 1982. *In Search of Excellence*, Harper and Row, New York, NY.

Petruzzellis, L.; D'Uggento, M. A. and Romanazzi, S. 2006. Students' satisfaction and quality of service in Italian universities, *Managing Service Quality* 16(4): 349–364.

Reisinger, Y. 2001. Unique characteristics of tourism, hospitality and Leisure services, in Kandampully, J., Mok, C. and Sparks, B. (Eds.) *Service Quality Management in the Hospitality, Tourism and Leisure,* Binghampton, NY: Haworth Hospitality Press.

Rowley, J. 1997. Beyond service quality dimensions in higher education and towards a service contract, *Quality Assurance in Education* 5(1): 7–14.

Ruby, C. 1998. Assessing Satisfaction with Selected Services Student Using SERVQUAL, a Market-Driven Model of Service Quality, *NASPA Journal* 35(4): 331–341.

Sahney, S.; Banwet, D. K. and Karunes, S. 2004. A SERVQUAL and QFD approach to total quality education A student perspective, *International Journal of Productivity and Performance Management* 53(2): 143–166.

Sallis, E. and Hingley, P 1991. *College Quality Assurance Systems*, Bristol: The Staff College.

Sherry, C.; Bhat, R.; Beaver, B. and Ling, A. 2004. Students as customers: The expectations and perceptions of local and international students, in *HERDSA 2004 conference*, Malaysia.

Sigala, M. 2004a. Investigating the factors determining e-learning effectiveness in tourism and hospitality education 8, *Journal of Hospitality and Tourism Education* 16(2): 11–21.

Sigala, M. 2004b. The ASP-Qual model: Measuring ASP service quality in Greece, *Managing Service Quality* 14(1): 103–114.

Sigala, M. and Baum, T. 2003. Trends and issues in tourism and hospitality higher education: visioning the future", *Tourism and Hospitality Research*, *The Surrey Quarterly Review* 4(4): 367–376.

Sigala, M. and Sakellaridis, O. 2004. Web users' cultural profiles and e-service quality: internationalization implications for tourism websites, *Information Technology and Tourism*, 7(1): 13–22.

Slade, P.; Harker, M. and Harker, D. 2000. Why Do They Leave, Why Do They Stay?, in Perceptions of Service Quality at A New University, *ANZMAC 2000, Visionary Marketing for the 21st Century: Facing the Challenge*.

Soutar, G. and McNeil, M. 1996. Measuring service quality in a tertiary institution, *Journal of Educational Administration* 34(1): 72–82.

Srikanthan, G. 1999.Universities and quality: A world view, in *11th International Conference on Assessing Quality in HE*, Manchester, UK.

Tam, M. 2001. Measuring quality and performance in higher education, *Quality in Higher Education* 7(1): 47–54.

Tan, K. and Kek, S. 2004. Service quality in Higher Education using an enhanced SERVQUAL approach, *Quality in Higher Education* 10(1): 17–24.

Tapiero, C. S. 1996. *The Management of Quality and its Control*, Chapman and Hall, London.

Teas, R. K. 1993a. Expectations, performance evaluation, and consumers' perceptions of quality, *Journal of Marketing* 57(4): 18–34.

Teas, R. K. 1993b. Consumers' expectations and the measurement of perceived service quality, *Journal of Professional Services Marketing* 8(2): 33–54.

Vidal, J.; Diez, G. and Vieira, M. J. 2003. Guidance services in Spanish universities, *Tertiary Education and Management*,9(4): 267–280.

Zafiropoulos, C. 2006. Students' attitudes about Educational Service Quality, *The Cyprus Journal of Sciences* 4: 13–24.

Zafiropoulos, C.; Fragidis, G. and Vrana. V. 2007. Service quality assessment in higher education: a comparison of students' and staff's attitudes in a Greek Higher Education Institute, in *Paper accepted for presentation in the 10th Toulon-Verona Conference*, *QUALITY IN SERVICES*, Thessaloniki Greece, September 2007.

Zafiropoulos, C.; Fragidis, G.; Kehris, E.; Dimitriadis, S. and Paschaloudis, D. 2005. Service quality assessment in higher education, the case of Technological Educational Institute (T.E.I.) of Serres, Greece, in *9th International Conference on Marketing and Development: Marketing Contributions to Prosperity and Peace*, Thessaloniki, Greece, June 8–11.

Zeithaml, V. A.; Parasuraman, A. and Berry, L. L. 1986. SERVQUAL: a multi-item scale for measuring customer perception of service quality, *Journal of Retailing Spring*: 12–40.

Zeithaml, V. A.; Parasuraman, A. and Berry, L. L. 1990. *Delivering Quality Service. Balancing Customer Perceptions and Expectations*, Free Press, New York.

Zhao, Y.; Liu, Y.-P. and Tan, J. 2006. Study on Quality Indicators in Higher Education, *in An Application of the SERVQUAL Instrument, Service Systems and Service Management, 2006 International Conference 2*: 1280–1286.