

Education Services Quality Assessment

Adrian Stancu

Universitatea Petrol-Gaze din Ploiești, Bd. București 39, Ploiești
e-mail: adrian_stancu3@yahoo.com

Abstract

This article presents different definitions of service quality and the quality characteristics of education services (the teaching method of subjects matters used by teachers, teachers' professional qualification, teachers' interest, the type of information conveyed by teachers, the communications between teachers and students and the education institution's technical-material ground). Moreover, this paper contains an assessment model of education services quality and an application for a better understanding of its workability.

Key words: *services quality, the quality characteristics of education services, assessment model of education services quality*

The Quality Characteristics of Education Services

The International Organization for Standardization defines quality as: “*the aptitude of totality characteristics to meet the needs and expectations of customers*”. [9, 11]

The product quality and the service quality relate to meeting customers' needs, and the last one more specific with “perceived service quality” in order to understand consumers. [2, 11]

For C.A. Grönroos and A. Parasuraman the perceived quality of services represents the difference between customers' expectation and their perceptions of the actual services received. [6, 11, 12]

K.D. Hoffman and J.E. Bateson define service quality as an attitude “formed by a long-term, overall evaluation of a performance”. [8, 11]

A.B. Win and K.S. Cameron present seven approaches to definitions of quality in higher education literature: resource-based, content-based, outcomes-based, value-based, productivity-based, constituency-based, and reputation-based (see Table 1). [1, 16]

The quality characteristics of education services determined through a quality marketing research, from student's point of view, are the following:

- The teaching method of subject matters used by teachers;
- Teachers' professional qualification;
- Teachers' interest;
- The type of information conveyed by the teachers;

- The communication between teachers and students;
- The education institution's technical-material ground.

Table 1. Major Approaches to Quality in Higher Education Literature

Approach	Definition	Example
Resource	Resource quality refers to those commodities, which are inputs to the institution and are used in its various functions and activities [13]	Human intellectual, physical, financial resources
Content	Content quality refers to the excellence of an institution in terms of what it teaches [3]	Exposure to liberal arts and Sciences
Outcomes	Outcome quality focuses on the conformity with mission specifications and global achievement [4]	Student/alumni achievement
Value-added	Value-added quality view of quality refers to the educational impact of the institution on its students and faculty members [3]	Difference between outcomes to inputs
Productivity	Productivity view of quality refers to those institutions that can 'do more with less' – those that are more efficient [7]	Ratio of outputs to inputs
Constituency	Constituency-based quality focuses of the needs of an institution's users - "a social service station" [17]	Satisfaction of students, parents, alumni, faculty, donors, community, government etc.
Reputation	Reputation view of quality refers to broad name-brand recognition [10]	Ranking and ratings

Source: Win, A. B., Cameron, K. S. Organizational Quality: An Examination of the Malcolm Baldrige National Quality Framework. Research in Higher Education, Vol. 39, No.5, 1998, pag.491-512

Assessment Model of Education Services Quality

To evaluate education services quality the author propose the following model, which takes on the above-mentioned quality characteristics of education services:

$$Q_{ES} = TM \cdot K_{TM} + PP \cdot K_{PP} + PI \cdot K_{PI} + TIC \cdot K_{TIC} + CPS \cdot K_{CPS} + ITG \cdot K_{ITG} \quad (1)$$

where:

Q_{ES} – denotes the education service quality;

TM – denotes the teaching method of subject matters used by teachers;

K_{TM} – denotes the weighting of the teaching method of subjects matters used by teachers;

PP – denotes teachers' professional qualification;

K_{PP} – denotes the weighting of the teachers' professional qualification;

PI – denotes teachers' interest;

K_{PI} – denotes the weighting of the teachers' interest;

TIC – denotes the type of information convey by teachers;

K_{TIC} – denotes the weighting of the type of information convey by teachers;

CPS – denotes the communications between teachers and students;

K_{CPS} – denotes the weighting of the communications between teachers and students;

ITG – represents the education institution’s technical-material ground;

K_{ITC} – denotes the weighting of the education institution’s technical-material ground.

It is necessary to observe the following rule:

$$\sum_{i=1}^6 K_i = 1 \quad (2)$$

The level of the six characteristics isn’t calculated as a ratio between the obtained values and the reference values, but using the Likert scale, with five points (Fig.1).

Very Poor	Poor	Neither Poor nor Good	Good	Very Good
1	2	3	4	5

Fig. 1. Likert Scale

Source: Evans, J.R., Lindsay, M.W. *The Management and Control of Quality*, Sixth Edition, Thomson South Western, 2005, p.177.

Both the level of education quality characteristics and the importance multipliers are provided through the information given by questionnaires or other data-acquisition methods, for each research.

The result obtained by reckoning Q_{ES} will be a number between 1 and 5, expressed in quality points, which represents the students’ evaluation regarding education services quality, provided by the studied educational organization, at a given moment, and which can be charted.

The proposed model has the advantage that, on the first hand, every time it is calculated the quality characteristics are hierarchically ranked taking into account the interviewees, allowing for a possible change, and the outcome makes available comparisons linking the services quality of numerous education institutions, on the other hand.

Example for Assessment Model of Education Services Quality

To demonstrate the workability of previous model, the author proposes to assess the university’s education services quality, using an 80 student’s sample.

It is necessary to follow two steps:

1) *Establishing the students’ evaluation of quality characteristics of education services.*

Table 2 gives the students’ evaluation of quality characteristics of education services.

For quality characteristics there were used the following abbreviations:

C1 – denotes the teaching method of subject matters used by teachers;

C2 – denotes teachers’ professional qualification;

C3 – denotes teachers’ interest;

C4 – denotes the type of information convey by teachers;

C5 – denotes the communications between teachers and students;

C6 – denotes the education institution’s technical-material ground;

Table 2. Students' evaluation of quality characteristics of education services

Quality characteristics	Very Poor	Poor	Neither Poor nor Good	Good	Very Good	TOTAL
	1 quality point	2 quality points	3 quality points	4 quality points	5 quality points	
C1	-	5	17	49	9	80
C2	-	2	10	52	16	80
C3	1	6	20	45	8	80
C4	-	4	19	50	7	80
C5	2	8	48	19	3	80
C6	3	9	51	15	2	80
TOTAL	6	34	165	230	45	480

Table 2 shows that the students' large majority assess education services quality like "Neither Poor nor Good" to "Good" and fewer "Very Good", "Poor" or "Very Poor".

The level of the six quality characteristics is calculated using the information from Table 2 and according to the formula (3):

$$QL_j = \frac{\sum_{i=1}^5 p_{ij} \cdot r_{ij}}{\sum_{i=1}^5 r_{ij}} \quad (3)$$

where:

QL_j – denotes the quality level of the characteristic j ;

p_{ij} – denotes the number of i points assigned to characteristic j ;

r_{ij} – denotes the number of respondents which assigned i point to characteristic j .

$$QL_1 = \frac{\sum_{i=1}^5 p_{i1} \cdot r_{i1}}{\sum_{i=1}^5 r_{i1}} \Rightarrow QL_1 = \frac{1 \cdot 0 + 2 \cdot 5 + 3 \cdot 17 + 4 \cdot 49 + 5 \cdot 9}{80} \Rightarrow QL_1 = \frac{0 + 10 + 51 + 196 + 45}{80} \Rightarrow$$

$$QL_1 = \frac{302}{80} \Rightarrow QL_1 = 3.775 \text{ quality points}$$

$$QL_2 = \frac{\sum_{i=1}^5 p_{i2} \cdot r_{i2}}{\sum_{i=1}^5 r_{i2}} \Rightarrow QL_2 = \frac{1 \cdot 0 + 2 \cdot 2 + 3 \cdot 10 + 4 \cdot 52 + 5 \cdot 16}{80} \Rightarrow QL_2 = \frac{0 + 4 + 30 + 208 + 80}{80} \Rightarrow$$

$$QL_2 = \frac{322}{80} \Rightarrow QL_2 = 4.025 \text{ quality points}$$

$$QL_3 = \frac{\sum_{i=1}^5 p_{i3} \cdot r_{i3}}{\sum_{i=1}^5 r_{i3}} \Rightarrow QL_3 = \frac{1 \cdot 1 + 2 \cdot 6 + 3 \cdot 20 + 4 \cdot 45 + 5 \cdot 8}{80} \Rightarrow QL_1 = \frac{1 + 12 + 60 + 180 + 40}{80} \Rightarrow$$

$$QL_3 = \frac{293}{80} \Rightarrow QL_1 = 3.6625 \text{ quality points}$$

$$QL_4 = \frac{\sum_{i=1}^5 p_{i4} \cdot r_{i4}}{\sum_{i=1}^5 r_{i4}} \Rightarrow QL_4 = \frac{1 \cdot 0 + 2 \cdot 4 + 3 \cdot 19 + 4 \cdot 50 + 5 \cdot 7}{80} \Rightarrow QL_1 = \frac{0 + 8 + 57 + 200 + 35}{80} \Rightarrow$$

$$QL_4 = \frac{300}{80} \Rightarrow QL_4 = 3.750 \text{ quality points}$$

$$QL_5 = \frac{\sum_{i=1}^5 p_{i5} \cdot r_{i5}}{\sum_{i=1}^5 r_{i5}} \Rightarrow QL_5 = \frac{1 \cdot 2 + 2 \cdot 8 + 3 \cdot 48 + 4 \cdot 19 + 5 \cdot 3}{80} \Rightarrow QL_5 = \frac{2 + 16 + 144 + 76 + 15}{80} \Rightarrow$$

$$QL_5 = \frac{253}{80} \Rightarrow QL_1 = 3.1625 \text{ quality points}$$

$$QL_6 = \frac{\sum_{i=1}^5 p_{i6} \cdot r_{i6}}{\sum_{i=1}^5 r_{i6}} \Rightarrow QL_6 = \frac{1 \cdot 3 + 2 \cdot 9 + 3 \cdot 51 + 4 \cdot 15 + 5 \cdot 2}{80} \Rightarrow QL_6 = \frac{3 + 18 + 153 + 60 + 10}{80} \Rightarrow$$

$$QL_6 = \frac{244}{80} \Rightarrow QL_4 = 3.050 \text{ quality points}$$

The level of quality characteristics of education services is charted in Figure 2.

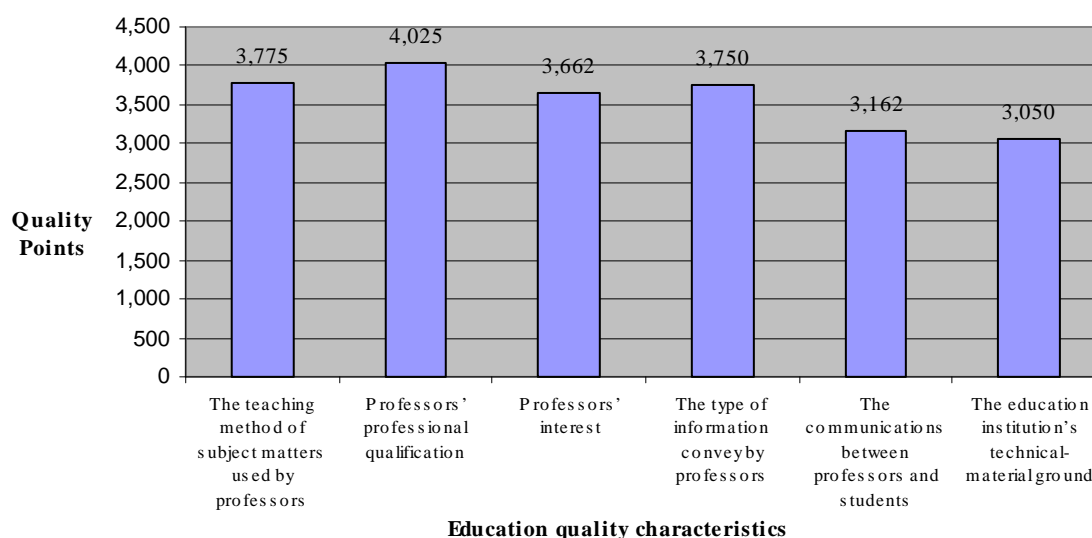


Fig.2. The level of quality characteristics of education services

Figure 2 shows that the “Teachers’ professional qualification” has the highest level of the quality characteristics (4.025 quality points), being followed by “The teaching method of subject matters used by teachers” (3.775 quality points), “The type of information conveyed by teachers” (3.750 quality points), “Teachers’ interest” (3.662 quality points), “The communications between teachers and students” (3.162 quality points) and the lowest is “The education institution’s technical-material ground” (3.050 quality points).

2) *Establishing the students’ appreciations of the weighting of quality characteristics of education services.*

Table 3 presents the weighting of the quality characteristics of education services, which result from centralization of the questionnaires.

Table 3. The weighting of the quality characteristics of education services

Quality charact.	Students’ appreciations of the weighting of quality characteristics										S_j	K_j
	1	2	3	4	5	6	7	8	9	10		
C1	-	-	-	-	-	-	-	5	22	53	768	0.2094
C2	-	-	-	-	-	-	2	26	49	3	693	0.1889
C3	-	-	-	-	-	3	23	50	4	-	615	0.1677
C4	-	-	-	-	-	3	24	51	2	-	612	0.1668
C5	-	-	-	-	5	25	48	2	-	-	527	0.1437
C6	-	-	-	6	19	51	4	-	-	-	453	0.1235
TOTAL											3668	1

To calculate the sums of notes belong to each quality characteristic is use the following formula:

$$S_j = \sum_{i=1}^{10} n_{ij} \cdot o_{ij} \quad (4)$$

where:

S_j – denotes the sum of notes belong to characteristic j ;

n_{ij} – denotes i note of the characteristic j ;

o_{ij} – denotes the number of respondents which assigned i note to characteristic j .

$$S_1 = \sum_{i=1}^{10} n_{i1} \cdot o_{i1} \Rightarrow S_1 = 1 \cdot 0 + 2 \cdot 0 + 3 \cdot 0 + 4 \cdot 0 + 5 \cdot 0 + 6 \cdot 0 + 7 \cdot 0 + 8 \cdot 5 + 9 \cdot 22 + 10 \cdot 53 \Rightarrow$$

$$S_1 = 40 + 198 + 530 \Rightarrow S_1 = 768$$

$$S_2 = \sum_{i=1}^{10} n_{i2} \cdot o_{i2} \Rightarrow S_2 = 1 \cdot 0 + 2 \cdot 0 + 3 \cdot 0 + 4 \cdot 0 + 5 \cdot 0 + 6 \cdot 0 + 7 \cdot 2 + 8 \cdot 26 + 9 \cdot 49 + 10 \cdot 3 \Rightarrow$$

$$S_2 = 14 + 208 + 441 + 30 \Rightarrow S_2 = 693$$

$$S_3 = \sum_{i=1}^{10} n_{i3} \cdot o_{i3} \Rightarrow S_3 = 1 \cdot 0 + 2 \cdot 0 + 3 \cdot 0 + 4 \cdot 0 + 5 \cdot 0 + 6 \cdot 3 + 7 \cdot 23 + 8 \cdot 50 + 9 \cdot 4 + 10 \cdot 0 \Rightarrow$$

$$S_3 = 18 + 161 + 400 + 36 \Rightarrow S_3 = 615$$

$$S_4 = \sum_{i=1}^{10} n_{i4} \cdot o_{i4} \Rightarrow S_4 = 1 \cdot 0 + 2 \cdot 0 + 3 \cdot 0 + 4 \cdot 0 + 5 \cdot 0 + 6 \cdot 3 + 7 \cdot 24 + 8 \cdot 51 + 9 \cdot 2 + 10 \cdot 0 \Rightarrow$$

$$S_4 = 18 + 168 + 408 + 18 \Rightarrow S_4 = 612$$

$$S_5 = \sum_{i=1}^{10} n_{i5} \cdot o_{i5} \Rightarrow S_5 = 1 \cdot 0 + 2 \cdot 0 + 3 \cdot 0 + 4 \cdot 0 + 5 \cdot 5 + 6 \cdot 25 + 7 \cdot 48 + 8 \cdot 2 + 9 \cdot 0 + 10 \cdot 0 \Rightarrow$$

$$S_5 = 25 + 150 + 336 + 16 \Rightarrow S_5 = 527$$

$$S_6 = \sum_{i=1}^{10} n_{i6} \cdot o_{i6} \Rightarrow S_6 = 1 \cdot 0 + 2 \cdot 0 + 3 \cdot 0 + 4 \cdot 6 + 5 \cdot 19 + 6 \cdot 51 + 7 \cdot 4 + 8 \cdot 0 + 9 \cdot 0 + 10 \cdot 0 \Rightarrow$$

$$S_6 = 24 + 95 + 306 + 28 \Rightarrow S_6 = 453$$

Setting out the weighing of the quality characteristics of education services is according to the formula (5):

$$K_j = \frac{S_j}{\sum_{j=1}^6 S_j} \quad (5)$$

where:

K_j – denotes the weighing of the characteristic j ;

S_j – denotes the sum of notes belong to characteristic j .

$$K_1 = \frac{S_1}{\sum_{j=1}^6 S_j} \Rightarrow K_1 = \frac{768}{3668} \Rightarrow K_1 = 0.2094$$

$$K_2 = \frac{S_2}{\sum_{j=1}^6 S_j} \Rightarrow K_2 = \frac{693}{3668} \Rightarrow K_2 = 0.1889$$

$$K_3 = \frac{S_3}{\sum_{j=1}^6 S_j} \Rightarrow K_3 = \frac{615}{3668} \Rightarrow K_3 = 0.1677$$

$$K_4 = \frac{S_4}{\sum_{j=1}^6 S_j} \Rightarrow K_4 = \frac{612}{3668} \Rightarrow K_4 = 0.1668$$

$$K_5 = \frac{S_5}{\sum_{j=1}^6 S_j} \Rightarrow K_5 = \frac{527}{3668} \Rightarrow K_5 = 0.1437$$

$$K_6 = \frac{S_6}{\sum_{j=1}^6 S_j} \Rightarrow K_6 = \frac{453}{3668} \Rightarrow K_6 = 0.1235$$

Figure 3 shows the weighting of quality characteristic of education services.

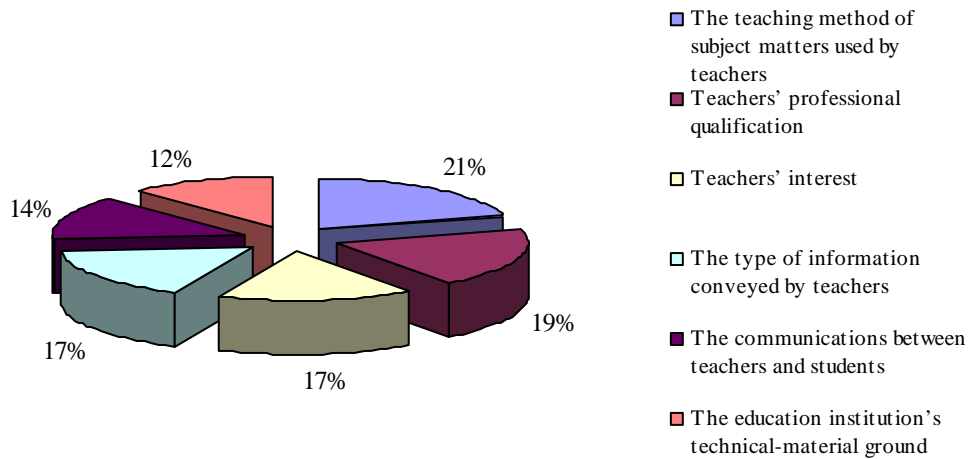


Fig. 3. The weighing of quality characteristic of education services

The biggest weighing in quality appreciation is the “The teaching method of subject matters used by teachers” (21%), being followed by “Teachers’ professional qualification” (19%), “Teachers’ interest” (17%), “The type of information convey by teachers” (17%), “The communications between teachers and students” (14%) and “The education institution’s technical-material ground” (12%) (see Figure 3).

For assessing the education services quality, we use the formula (1), the level of quality characteristics determined on *a*) step and the information from Table 3.

$$Q_{ES} = TM \cdot K_{TM} + PP \cdot K_{PP} + PI \cdot K_{PI} + TIC \cdot K_{TIC} + CPS \cdot K_{CPS} + ITG \cdot K_{ITG} \Rightarrow$$

$$Q_{ES} = 3.775 \cdot 0.2094 + 4.025 \cdot 0.1889 + 3.6625 \cdot 0.1677 + 3.750 \cdot 0.1668 + \\ + 3.1625 \cdot 0.1437 + 3.05 \cdot 0.1235$$

$$Q_{ES} = 0.790485 + 0.7603225 + 0.6142012 + 0.6255 + 0.4544512 + 0.376675 \Rightarrow$$

$$Q_{ES} = 3.6216349 \Rightarrow Q_{ES} \cong 3.622 \text{ quality points}$$

The assessment of education quality characteristics of the analyzed university is *3.622 quality points*, which can be compared with the one from the previous period of time or with data about other universities. In compliance with Likert Scale this value is between “Neither Poor nor Good” and “Good”.

References

1. Anyamele, S. C. - *Institutional Management In Higher Education - A Study of Leadership Approaches to Quality Improvement in University Management – Nigerian and Finnish Cases*, University of Helsinki, Department of Education, *Research Report 195*, Helsinki, 2004, pag. 76-77
2. Arnould E. J., Price, L. L., Zinkhan, G. M. - *Consumers*, New York, Mc-Graw-Hill Higher Education, 2002
3. Astin, A. - *Achieving Educational Excellence*, San Francisco: Jossey-Bass, 1985
4. Bogue, E. G., Saunders, R. L. - *The Evidence for Quality: Strengthening the Tests of Academic and Administrative Effectiveness*, San Francisco: Jossey-Bass, 1992
5. Evans, J.R., Lindsay, M. W. - *The Management and Control of Quality, Sixth Edition*, Thomson South-Western, 2005, pag.177
6. Grönroos, C. A - Service quality model and its marketing implications, *Journal of the Academy of Marketing Science*, 24 (1), Winter, 1984, pag.36 -44
7. Hines, E. R. - Higher Education and State Governments: Renewed Partnership, Cooperation, or Competition? *ASHE-ERIC Higher Education Report*, No. 5 College Station. Texas: Association for the Study of Higher Education, 1988
8. Hoffman, K. D., Bateson, J. E. - *Essentials of Service Marketing: Concepts, Strategies, and Cases*, (2nd. Ed.). Australia: South Western Thompson Learning, 2001, pag. 324
9. ISO 9000:2000, *Quality management systems - Fundamentals and vocabulary*
10. McGuire, J. The Efficient Production of Reputation by Prestige Research Universities in the United States, *Journal of Higher Education*, 1988, pag. 59-367
11. Nor Khaidah, A. - *Service Quality Dimensions: A Study on Various Sizes of Grocery Retailers – A conceptual Paper*, Faculty of Business Administration, Universiti Tun Abdul Razak, Kelana Jaya, Selangor, Malaysia, Proceeding of IBBC 2004, pag. 633-642
12. Parasuraman, A., Zeithaml, V. A., Berry, L. L. A - Conceptual Model of Service Quality and Its Implications for Future Research, *Journal of Marketing*, 49, Fall, 1985, pag.41-50

13. Schmidtlein , F. A. *Quality: How Do Higher Education Leaders Define It? The Planning Process Perspective*, St Louis: Association for the Study of Higher Education, 1988
14. Stanciu , I. - *Qualytology. The Science of Commodities*, Renaissance Publishing, Bucharest, 2004
15. Stanciu , I., Pășărilă , O., Militaru , C., Iacob , A., Crăciun , C. *Qualymeter*, University Publishing House, Bucharest, 2004
16. Win , A.B., Cameron , K. S. *Organizational Quality: An Examination of the Malcolm Baldrige National Quality Framework. Research in Higher Education*, Vol. 39, No.5, 1998, pag. 491-512
17. Wolf , R.P. *The Idea of the University*, New Jersey, Bacon Press, 1992

Evaluarea calității serviciilor de învățământ

Rezumat

Acest articol prezintă diferite definiții ale calității serviciilor și caracteristicile de calitate ale serviciilor de învățământ (modul de predare a disciplinelor de către cadrele didactice, pregătirea profesională a cadrelor didactice, interesul manifestat de cadrele didactice, natura informațiilor transmise de cadrele didactice, comunicarea dintre cadrele didactice și studenți, baza tehnico-materială de care dispune instituția de învățământ superior). De asemenea, lucrarea conține un model de evaluare a calității serviciilor de învățământ, precum și o aplicație, în vederea unei mai bune înțelegeri a utilității acestuia.