Evaluation of the factors that determine quality in higher education: an empirical study

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Abstract

Purpose – The aim of this paper is to identify the quality determinants for education services provided by higher education institutions (HEIs) in Greece and to measure their relative importance from the students’ points of view.

Design/methodology/approach – A multi-criteria decision-making methodology was used for assessing the relative importance of quality determinants that affect student satisfaction. More specifically, the analytical hierarchical process (AHP) was used in order to measure the relative weight of each quality factor.

Findings – The relative weights of the factors that contribute to the quality of educational services as it is perceived by students was measured.

Research limitations/implications – The research is based on the questionnaire of the Hellenic Quality Assurance Agency for Higher Education. This implies that the measured weights are related mainly to questions posed in this questionnaire. However, the applied method (AHP) can be used to assess different quality determinants.

Practical implications – The outcome of this study can be used in order to quantify internal quality assessment of HEIs. More specifically, the outcome can be directly used by HEIs for assessing quality as perceived by students.

Originality/value – The paper attempts to develop insights into comparative evaluations of quality determinants as they are perceived by students.

Keywords Higher education, Service quality assurance, Greece

Paper type Research paper

Introduction

Universities have seen the provision of higher education to become a product and have been driven by competition to examine the quality of their services, to redefine their product and to measure customer satisfaction in ways that are familiar to service marketing specialists (Kotler, 1985). Universities have realized that their long-term survival depends on how good their services are and that quality sets one university apart from the rest (Aly and Akpovi, 2001; Kanji et al., 1999).

Education services are often intangible and difficult to measure, since the outcome is reflected in the transformation of individuals in their knowledge, their characteristics, and their behaviour. Therefore, there is no commonly accepted definition of quality that applies specifically to the higher education sector (Michael, 1998). Further, when we assess quality of higher education institutions (HEIs), issues such as autonomy and independence complicate the whole process (Middlehurst and Gordon, 1995). In this context, accreditation agencies that operate in each country have been trying to assess the quality offered by the institutions by evaluating and accrediting their degrees and the educational work offered. However, the operation of
these agencies has not greatly influenced the perception of quality in the sector or clarified issues on institutional quality assessment (Parri, 2006).

A simplistic approach to quality assessment would be to briefly describe what quality is, set certain standards that can be assessed, compare these with the work done in each institution and draw a conclusion on the quality of the institution in question. Unfortunately, quality in higher education as well as defining a way to measure is not a simple issue (Parri, 2006). Furthermore, the complexity of the process increases since the set of quality attributes to be measured and their relative weight is not constant but varies according to the different stakeholder point of view.

This study focuses on the determinants of service quality within the Higher Education sector and attempts to assess their individual weight in defining quality from a student perspective.

More specifically, this study’s objective is to establish and test dimensions for measuring service quality in higher education, with specific reference to students following undergraduate taught programs and to measure student’s preferences in the available educational services. It also aims to measure and analyse the factors that determine the quality, to what extent they meet the students’ expectations and if there are any differences of the students’ perceptions about the weighting of the importance based on demographic factors.

In the following sections, we will review the related literature, present an overview of quality assurance in HEIs, and then discuss the research methodology. Subsequently, we will present the results of the study. Finally, we will present the recommendations – conclusions.

Quality and quality assurance in higher education
Even though, there is an enormous volume of published books and journal articles on the subject of quality, starting from early 1980s up to now, the concept of quality is still frequently misrepresented, misunderstood, or both, by many academics (Doherty, 2008).

A number of different definitions has been given concerning quality in Higher Education, each one representing a different view, including: exceptional, perfection, as fitness for purpose, value for money (Harvey and Green, 1993), the stakeholder perspective of quality (Middlehurst, 1992), degree to which the previously set objectives are met (Vroeijenstijn, 1992). Doherty (2008) offers a very interesting discussion on the meaning of quality in education presenting his reflections on this topic for the last 30 years.

At the same time, there have been a lot of definitions in the literature describing the concept of service quality. It has been oriented as focusing on meeting customers’ needs and requirements screening if the service delivered matches their expectations (Lewis et al., 1994). In fact, a lot of the contemporary quality descriptions originate from the thesis that quality is the degree up to which customer expectations are met (Parasuraman et al., 1988). Besides, considerations of quality are sternly linked to the subject of satisfaction leading prospect behaviour. Customer satisfaction can be defined as the attitude or feeling of a customer towards a product or service following the usage of it.

The debate of the crucial role of service quality in HEIs and its measurement has been the focus of a number of studies. A popular approach for evaluating quality in
HEIs is quality function deployment (QFD). QFD is one of the total quality management (TQM) techniques, which can be applied for process and design improvement (Aytac and Deniz, 2005; Hwarng and Teo, 2001; Singh *et al.*, 2008). The purpose of QFD is to visualise cause-and-effect relationships starting from the customer needs all the way down to the production process. Numerous reports also documented the benefits and results of adopting TQM principles in the various colleges and universities (Hwarng and Teo, 2001). Similarly, other studies measure service quality by replicating or adapting Parasuraman *et al.* (1988) five-dimension (tangibles, reliability, responsiveness, assurance and empathy) SERVQUAL model. Brochado (2009) compares the main alternative instruments to measure service quality in higher education: SERVQUAL (Parasuraman *et al.*, 1988), (SERVPERF) (Cronin and Taylor, 1992), weighted SERVQUAL (Parasuraman *et al.*, 1991), weighted SERVPERF (Cronin and Taylor, 1992) and (HEdPERF) scale (Firdaus, 2006), concluded that SERVPERF and HEdPERF present the best measurement capability, but it is not possible to identify which one is the best. SERVQUAL defines five dimensions for quality:

1. **Tangibles.** The appearance of physical facilities, equipment, support services and service personnel.
2. **Reliability.** The degree to which the knowledge, skills learned and services are offered accurately, dependably and on time without errors.
3. **Responsiveness.** This refers to the willingness to help customers and meet their needs and wants. In difficult situations, it is also the ability to respond effectively.
4. **Assurance.** The confidence and trust that the customers hold towards the institute and the feeling of safety in case of danger.
5. **Empathy.** The attention and care that the institution may offer to customers. This part also refers to convenient operating hours.

Moving towards the same direction, the European Commission has put pressure on Member States to harmonise their way of operating so as to increase transparency, accountability and comparability of EU Higher Education Institutions. This contributes to the creation of a competitive market where quality is the distinguishing factor between institutions (Commission of the European Communities, 2003).

The Bologna Treaty (1999) “aims to ensure that our HEIs have the necessary resources to continue to fulfil their full range of purposes. These purposes include: preparing students for life as active citizens in a democratic society; enabling their personal development; creating and maintaining a broad, advanced knowledge base; and stimulating research and innovation” (Commission of the European Communities, 2000).

The European Union aims to become a world reference for the quality and the relevance of its education and training and should be the most attractive world region to students, scholars and researchers (Commission of the European Communities, 2003).

The signatories to the Bologna Treaty have committed themselves to introduce a three cycle system (bachelor/master/doctorate) education process, to apply quality assurance principles and to recognise qualifications and periods of study in higher education institutions in other countries. Member States have also committed to assisting HEIs in initiating a reform process to ensure their conformity to these three priorities. Ministers reaffirmed their commitment to the objective of establishing the
European Higher Education Area by 2010 when they met in Prague. The Prague Communique of 2001 challenged three organizations, the European University Association (EUA), the National Unions of Students in Europe (ESIB), the European Association for Quality Assurance in Higher Education (ENQA) and the European Commission to work together and establish a common framework of reference and best practices (ENQA, 2005).

In order for internal quality assurance systems of HEIs to achieve their purpose they should incorporate the following principles (ENQA, 2005):

1. Define the policy and procedures for quality assurance of the quality and standards of their programmes and awards, including their systematic review. Institutions need to adopt a culture of quality improvement in all aspects of their educational product.

2. Assessment of students using published criteria, regulations and procedures, consistently applied.

3. Quality assurance of teaching staff, facilities and resources.

4. Data processing of information collected through surveys and other sources for the effective management of the institution and customer service.

5. Objective and up to date information available to the public about a variety of issues such as degrees and awards offered, financial data, quality assessments etc. (European Association for quality assurance in Higher Education, 2005).

To comply with the Bologna process, Greece established the Hellenic Quality Assurance Agency for Higher Education (HQAA) and in each HEI an internal quality assurance office.

Concerning, the main objective of this study, on how to measure the service quality in Higher Education, from the students' perspective, Marsh and Roche (1977) have examined the critical issues on how to make students' evaluations of teaching more effective. In their review among others, they have indicated that students' evaluation of teaching are multidimensional, reliable and stable, strongly related with instructors and not with taught course, and relatively unaffected by factors such as workload, class size, module difficulty, etc. Similarly, Hwarng and Teo (2001) have used service-based quality function deployment (QFD) methodology to translate the voices of customers (VsOC)/students in stages into operations requirements.

Likewise, Wiklund and Wiklund (1999) present a systematic approach to the course development process, where focus is put on student satisfaction and learning. The approach consists of a combined usage of several methods, such as QFD and conjoint analysis that together transform student needs into quantified course attributes. The same technique QFD is used by Lam and Zhao (1998) and Raharjo et al. (2007), where QFD is complemented by Analytical Hierarchical Process (AHP) for creating priorities after applying VsOC and for each group of customers.

**Research methodology**

This study attempted to look at the determinants of quality in HEIs rather than quality as a whole, and its objective was to measure the weights of the quality determinants in order to discover those that influence students' satisfaction most. The starting point was the questionnaire developed by HQAA (www.hqaa.gr), which defined explicitly the quality determinants.
In order to achieve this objective the analytical hierarchical process (AHP) was used. The AHP is a multi-criteria decision making (MCDM) method that was introduced by Saaty (1980). MCDM is a well known class of decision making, which addresses decision problems that are related with a number of decision criteria. Common MCDM methods include priority based, outranking, distance based decision making etc. Each method based on its characteristics can be classified as deterministic/stochastic/fuzzy method or depending upon the number of decision makers, as single/group decision making method (Figueira et al., 2005).

The primary objective of AHP is to classify a number of alternatives (e.g. a set of quality determinants) by considering a given set of qualitative and/or quantitative criteria, according to pair wise comparisons/judgments provided by the decision makers. AHP results in a hierarchical levelling of the quality determinants, where the upper hierarchy level is the goal of the decision process, the next level defines the selection criteria which can be further subdivided into sub criteria at lower hierarchy levels and, finally, the bottom level presents the alternative decisions to be evaluated.

The main advantages of applying the AHP method are (Jadhav and Sonar, 2009):

- it is capable to provide a hierarchical decomposition of a decision problem that helps in better understanding of the overall decision making process;
- it handles both quantitative and qualitative criteria;
- it is based on relative, pair wise comparisons of all decision elements; instead of arbitrarily defining a percentage score and a weight for each decision element, AHP allows the decision maker to focus on the comparison of two criteria/alternatives, at a time, thus it decreases the possibility of defining ratings based only on personal perceptions of the evaluators or other external influences;
- AHP is applicable to both individual and group-based decision making (this is often achieved by considering the geometric mean of comparison values),
- it enables consistency checks upon pair wise decision judgments; and
- it supports sensitivity analysis to examine the effects of changing values of criteria weights on the final ranking of the decision alternatives.

There are three the basic concepts that AHP is based on (see Figure 1):

1. Complexity analysis: a hierarchical tree is created with criteria, sub-criteria and alternative solutions as the leaves.
2. Calculation/estimation is executed in every tree level based on a 1 to 9 scale in order to measure priorities. More specifically, a pair wise comparison takes place in every tree level with regards to the parent node. The goal node in the hierarchical tree exists only to highlight the top-down analysis of the methodology.
3. Synthesis with ultimate goal to extract the final priorities of the alternatives.

As mentioned, AHP is a method that orders the priorities in a given situation, incorporating the element of subjectivity and intuition so that a final decision can be reached by making decisions for part-issues in a consistent way and gradually move up levels to deal with the given situation having a clear view of what it entails (Al Harbi, 2001).
In AHP, alternatives are paired and decision makers are called to note their preference between the two alternatives for a variety of issues (see Figure 1), in a scale of 1-9, assigning relative levels of priority to these judgments as they go along. Like AHP, pairwise comparisons take place between elements based on the Saaty’s fundamental scale of absolute numbers (Table I).

Each element in compared to all other elements, using the scale presented, for defining their relative importance. These judgments are quantified and calculated so that when synthesized, they reveal the best alternative. Eigen values are used to control how consistent the responses really are (Saaty, 1980).

AHP is relatively simple and logical and given that a certain consistency in the part-decisions is maintained, AHP can help decision makers deal with complicated issues where often not only tangible but also intangible parameters affect their decision. It should be noted briefly at this point that AHP is as effective as its design in each individual case and that analysts should exercise care and precision in capturing the true sub-elements and requirements of the case in question. And, more often than not, spreadsheets and other computerized programs are necessary for the evaluation of the data (Dyer and Forman, 1992).

![AHP hierarchical tree](image)

**Table I.**

<table>
<thead>
<tr>
<th>Numerical rating</th>
<th>Verbal judgments of preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Extremely preferred</td>
</tr>
<tr>
<td>8</td>
<td>Very strongly to extremely preferred</td>
</tr>
<tr>
<td>7</td>
<td>Very strongly preferred</td>
</tr>
<tr>
<td>6</td>
<td>Strongly to very strongly preferred</td>
</tr>
<tr>
<td>5</td>
<td>Strongly preferred</td>
</tr>
<tr>
<td>4</td>
<td>Moderately to strongly preferred</td>
</tr>
<tr>
<td>3</td>
<td>Moderately preferred</td>
</tr>
<tr>
<td>2</td>
<td>Equally to moderately preferred</td>
</tr>
<tr>
<td>1</td>
<td>Equally preferred</td>
</tr>
</tbody>
</table>

**Figure 1.**

AHP hierarchical tree
There are two difficult points related with the practical application of AHP. Firstly, when determining “crisp” comparative values, any uncertainties on judgments of decision makers cannot be easily handled. Secondly, when there are dependencies among the selection criteria, the Analytic Network Process (ANP) can be used, an AHP extension that handles both intra- and inter-dependencies among clusters of selection criteria (Gerogiannis et al., 2009; Saaty, 1996).

The study has been conducted by means of a questionnaire that was distributed to students of Technological Educational Institute of Larissa (TEI/L) and particularly to the School of Business and Economics. The school consists of four academic departments: the Department of Accounting, the Department of Project Management, the Department of Business Administration, and the Department of Tourism Enterprises.

TEI/L is the third largest Technological Educational Institute in Greece, a self-governing higher education institution that was established in 1983. It comprises of four schools, two branches and 21 academic departments with a total of 15,000 registered students (www.teilar.gr).

Questionnaires were distributed to current undergraduate students of all departments in the School of Business and Economics. The questionnaires were distributed to students from all academic years, so as to provide a spherical point-of-view about the institution and the opportunity to highlight differences among students of different academic years. The respondents have been asked to state their personal views about the degree of importance of the services offered by the university. In total, 300 questionnaires have been distributed representing a satisfactory sample. Student’s participation was voluntary and completely anonymous.

The sample was distinguished by gender, department of study and year of study. More specifically, the distribution of students per gender was: 54 percent female and 46 percent male; the distribution per department was: 33 percent of the students were from the accounting department, 28 percent from the project management department, 21 percent from the business administration department and 18 percent from the tourism management department. Finally, the distribution of students per year of study was: 15 percent for first year students, 21 percent for second year students, 17 percent for third year students, 22 percent for fourth year students and 25 percent for students attending courses after the fourth year.

A random sampling technique was used and it was based on three criteria. The first one was the department, the second was the year of study and the third was the gender of the respondents. The population of the research consists of 4,878 students for the academic year 2007-2008 for the four departments of the School of Business and Economics of the TEI/L.

Data collection took place over a period of one week and resulted in a sample of 265 valid questionnaires from a total of 300 questionnaires distributed giving a response rate of 88.33 percent.

The survey instrument was a self-explanatory questionnaire that respondents could complete by themselves. The questions were short, clear and easy to understand. Students were given verbal and written instructions and could ask for clarification if they did not understand a question. The questionnaires were completed in the authors’ presence thus avoiding a large number of invalid responses.

As it was mentioned, Greece only recently established a HQAA. Only in 2007, TEI/L established an internal quality assurance office and the first quality assessments were
conducted the same year. The instruments used for assessing the quality were mainly developed by HQAA. The questionnaire used in this study has been constructed using the same quality criteria, as they were proposed by the HQAA. Some additional criteria were added concerning questions related with the location of TEI/L. Even though the questionnaire was not structured according to SERVQUAL defined dimensions (tangibles, reliability, responsiveness, assurance and empathy) it was ensured that all these aspects were covered. The basic reason for not adopting a SERVQUAL questionnaire was the need to evaluate the actual quality criteria, as they were presented in the official student quality assessment questionnaire used at TEI/L. It was preferable to use the same terminology and the same questions rather introducing a new set of questions. Further, this decision affected positively the validity of the results and simplified the questionnaire’s administration process.

The questionnaire included seven areas for evaluation: the academic personnel, the administration, the library, the curriculum, the location of the institute, the available infrastructure the services and future career prospects.

Figure 2 presents these seven dimensions and the sub-criteria that were used in the questionnaire. The tree-map constitutes a particularly efficient way to visualize the hierarchy of our problem as a diagram. At the top, the goal is placed, the criteria are placed in the middle and the sub-criteria at the bottom, in smaller rectangular boxes. The sub-criteria are presented in Table II.

The analysis of the data was carried out in five steps as explained in detail in the following paragraphs. Firstly, a range of demographic profiling was done. Secondly, the consistency of the responses was assessed and finally, the level of determinants of service quality were compared with demographic variables such as the department of the faculty and years of study to understand differences in perceptions among different segments of the student population.

**Step 1**
We developed the hierarchical representation of the problem by defining levels of criteria and sub-criteria most important to students. Even though the application of the AHP method provides for alternatives, in this study alternatives are not examined since the purpose was to define the weight of the quality determinants (sub-criteria). For example, for the group academic staff we defined the following criteria: “academic qualifications”; “professional experience”; “communication skills”; “friendliness/approachability”; “links with enterprises”; and “research activity”.

**Step 2**
The criteria of each group are being compared in pairs. In a scale of 1 to 9, elements are assigned different degrees of relative importance as it is illustrated in Table I. For example, if a student replies that element A is absolute important than element B, A is said to have a relative weight of nine times that of B.

Then, a pair wise comparison matrix is created for each group of criteria (academic staff, administration, library, curriculum structure, location of the institute, its facilities and career prospects). This is done by dividing each element of the matrix by its column total.
Evaluation of the factors that determine quality
Step 3
The eigen value was calculated to determine the relative weight of each criterion in relation to the one immediately above in the hierarchy. The priority vector is established by calculating the row averages. At this point, the consistency ratio is calculated according to the following equation CR = CI/RI. Consistency index (CI) is calculated by the following equation CI = \lambda_{max} - n/n - 1, where n is the number of sub-criteria of each criterion. The appropriate value of the random consistency ratio (RI) is selected from Table III.

<table>
<thead>
<tr>
<th>QAE 18,3</th>
</tr>
</thead>
</table>
| Academic staff | A1: Academic qualifications  
B1: Professional experience  
C1: Communication skills  
D1: Friendliness/approachability  
E1: Links with enterprises  
F1: Research activity |
| Administration services | A2: Rapid Service  
B2: Friendliness  
C2: Availability of Information material  
D2: Clear guidelines and advice  
E2: Office automation Systems for customer service (IT support)  
F2: Use of internet for announcements  
G2: Sufficient working hours |
| Library services | A3: Availability of textbooks and journals  
B3: Easy borrowing process  
C3: Friendliness  
D3: Working hours  
E3: E-library |
| Curriculum structure | A4: Interesting module content/books  
B4: Educational material of high quality  
C4: Efficient structure of modules  
D4: Availability of information on the module structure  
E4: Variety of elective modules/modules on specialization areas  
F4: Laboratories (connection with market demands)  
G4: Weekly timetable |
| Location | A5: Accessibility  
B5: Frequency of transport service  
C5: Cost of transportation |
| Infrastructure | A6: Quality infrastructure (classrooms and laboratories)  
B6: Catering services  
C6: Free accommodation  
D6: Sport facilities  
E6: Medical facilities  
F6: Quality infrastructure (administration)  
G6: Availability of services to host social and cultural events  
(theatrical plays, cinema) |
| Carrier prospects | A7: Perspectives for professional career  
B7: Opportunities for postgraduate programs  
C7: Opportunities to continue studies abroad  
D7: Availability of exchange programs with other institutes  
E7: Institution’s links with business |

Table II.
Sub-criteria of the case study
The design of the AHP hierarchy must satisfy the goal of developing a model that will allow students to decide which factor they regard most important in assessing quality of the services provided in the TEI of Larissa.

The same procedure is applied for all seven criteria in order to assess their individual importance and their degree of contribution to the overall goal.

**Step 4**
This step examines whether the created pairs of criteria are consistent or not. The consistency ratio is used to check whether a criterion can be used for decision-making. If the CR value of the criterion is less than 0.1, then the criterion is considered of acceptable consistency, while bigger value means that it should not be used for estimating the priority vector.

It is important to note that AHP does not demand perfect consistency. Some inconsistency is allowed in random judgments. An inconsistency ratio of about 10 percent or less is usually considered “acceptable” (Dyer and Forman, 1992).

In our case, a large number of questionnaires were rejected since the consistency ratio was greater than 10 percent. In some cases, 50 percent of the questionnaires were rejected. Reasons that contributed to this high rejection rate were that:

- the questionnaire distributed was quite long, in an effort to collect as much information as possible; and
- a significant part of the total population, and more specifically first year students, lacked the experience to make valid choices.

For this reason, their answers had higher consistency ration and many participants seemed reluctant to put the necessary effort to complete the questionnaire.

**Step 5**
The sub-criterion priorities are combined to disclose the most important sub-criteria for each criterion in order to develop an overall priority ranking. More specifically, the relative weights of sub-criteria (priorities) for every criterion can be computed as normalized geometric means (the n\textsuperscript{th} root of the product of n judgments) of the rows (aggregating individual responses of the 265 questionnaires). In order to set the weights of the elements in a hierarchy, we prefer the geometric means, as the most common approach to set priorities. Note that the weights for criteria at each level, within their parent criterion sum to 1 (called local priorities).

**Research results**
The analysis of the results obtained through the pairwise comparisons of the criteria revealed some interesting facts.

Concerning, group of sub-criteria related with academic staff criterion it was observed that for all groups of students, “communications skills” is the most important criterion, followed by “friendliness/approachability”. This demonstrates that the participants to the survey regard personality traits more important than their

<table>
<thead>
<tr>
<th>Size of matrix</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random consistency</td>
<td>0</td>
<td>0</td>
<td>0.58</td>
<td>0.9</td>
<td>1.12</td>
<td>1.24</td>
<td>1.32</td>
<td>1.41</td>
<td>1.45</td>
<td>1.49</td>
</tr>
</tbody>
</table>
professional skills, preferring to have good interpersonal relations with their teachers. The third criterion, based on their degree of importance, is the relevant “professional experience”, closely followed by “research activity” and “academic qualifications”. It can be seen that students rank experience higher than subject knowledge. “Links with Business” rank quite low mainly due to the fact that this is a concept new to Greek HEI’s and many students are not familiar with the benefits of such relationships.

The weights for academic staff criterion are presented in Figure 3. Obviously, the sum of all weights is 100 percent.

Regarding the administration services, the provision of correct directions and advice on administrative issues is top priority for the total sample population regardless of the department or year of study. Students see the administration service as the authoritative source of information on matters relating to their studies and place high importance to a good advice. This is followed by the degree of friendliness, not necessarily as part of the secretariat job, but as a feeling created on the basis of interpersonal relations. Next, the most important factor is the computerized data processing, with the hours of service being of the lowest importance. Close to the last two criteria is the use of internet for communication purposes. It is noted that all these criteria relate to students’ preference for a more flexible service. The availability of information material is not a priority as long as there is direct personal contact and neither does rapid service, with students preferring receiving high quality services instead (see Figure 4).

As expected and presented in Figure 5, students consider more important the “availability of books and periodicals”. The second criterion is the “ease of the borrowing process” followed closely by “friendly service” and “operating hours”. Lastly, “electronic library” does not seem to be particularly attractive to students, a fact that was not anticipated by the authors.

Regarding the structure of the curriculum (Figure 6), all students believe that the existence of practical modules (“laboratories”) is of importance (linking education to the needs of the market). This was expected since TEI/L serves specifically to support and develop applied sciences. This is followed very closely by the number of “elective modules” offered. Third in the list of priorities is the effective “organization of classes and modules” and fourth the “availability of information” concerning the modules. The “high-quality educational material” and the “convenient timetable” are following the above while students are less interested whether or not they find the “content of the course” attractive.
To questions related to the location of the TEI, all students consider the “cost of transport” a top priority while “frequency of transport service” comes second and “accessibility” comes third.

In the criterion of infrastructure as is clearly presented in Figure 7, all questionnaires choose the properly equipped classes and laboratories as the most important sub-criterion, with a significant difference between this percentage and the percentages of other preferences. Catering and accommodation facilities have the same ranking in students’ priorities list. Of great significance are also the medical coverage and the easy access to administrative services. Low down on the list is the availability of rooms for events and the athletic infrastructure.

Finally, the findings concerning the career prospects group (see Figure 8) demonstrate that all students, irrespective of their department, consider career prospects as a top priority, followed by opportunities for postgraduate education and
Figure 6. Overall weights of sub-criteria for the programme structure criterion

Figure 7. Overall weights of sub-criteria for the facilities criterion

Figure 8. Overall weights of sub-criteria for the career prospects criterion
<table>
<thead>
<tr>
<th>Factor criteria</th>
<th>Overall weights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic staff</strong></td>
<td></td>
</tr>
<tr>
<td>Academic qualifications</td>
<td>0.158</td>
</tr>
<tr>
<td>Professional experience</td>
<td>0.171</td>
</tr>
<tr>
<td>Communication skills</td>
<td>0.216</td>
</tr>
<tr>
<td>Friendliness/approachability</td>
<td>0.194</td>
</tr>
<tr>
<td>Links with enterprises</td>
<td>0.102</td>
</tr>
<tr>
<td>Research activity</td>
<td>0.160</td>
</tr>
<tr>
<td><strong>Administration service</strong></td>
<td></td>
</tr>
<tr>
<td>Rapid service</td>
<td>0.068</td>
</tr>
<tr>
<td>Friendliness</td>
<td>0.170</td>
</tr>
<tr>
<td>Availability of information material</td>
<td>0.110</td>
</tr>
<tr>
<td>Clear guidelines and advice</td>
<td>0.179</td>
</tr>
<tr>
<td>Office automation systems for servicing students</td>
<td>0.163</td>
</tr>
<tr>
<td>Use of internet for administration</td>
<td>0.153</td>
</tr>
<tr>
<td>Adequate working hours</td>
<td>0.158</td>
</tr>
<tr>
<td><strong>Library’s service</strong></td>
<td></td>
</tr>
<tr>
<td>Availability of textbooks and journals</td>
<td>0.254</td>
</tr>
<tr>
<td>Easy borrowing process</td>
<td>0.214</td>
</tr>
<tr>
<td>Friendliness</td>
<td>0.185</td>
</tr>
<tr>
<td>Working hours</td>
<td>0.177</td>
</tr>
<tr>
<td>E-library</td>
<td>0.170</td>
</tr>
<tr>
<td><strong>Curriculum structure</strong></td>
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</tr>
<tr>
<td>Interesting module content/books</td>
<td>0.128</td>
</tr>
<tr>
<td>Educational material of high quality</td>
<td>0.098</td>
</tr>
<tr>
<td>Efficient structure of modules</td>
<td>0.145</td>
</tr>
<tr>
<td>Availability of information on the curriculum structure</td>
<td>0.135</td>
</tr>
<tr>
<td>Variety in elective modules/modules on specialization areas</td>
<td>0.189</td>
</tr>
<tr>
<td>Laboratories (connection with market demands)</td>
<td>0.190</td>
</tr>
<tr>
<td>Lectures timetable</td>
<td>0.114</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
</tr>
<tr>
<td>Accessibility of campus</td>
<td>0.283</td>
</tr>
<tr>
<td>Frequency of transport service</td>
<td>0.352</td>
</tr>
<tr>
<td>Cost of transportation</td>
<td>0.365</td>
</tr>
<tr>
<td><strong>Facilities</strong></td>
<td></td>
</tr>
<tr>
<td>Quality infrastructure (classrooms and laboratories)</td>
<td>0.243</td>
</tr>
<tr>
<td>Quality infrastructure (administration)</td>
<td>0.120</td>
</tr>
<tr>
<td>Catering services</td>
<td>0.161</td>
</tr>
<tr>
<td>Free accommodation</td>
<td>0.160</td>
</tr>
<tr>
<td>Sport facilities</td>
<td>0.083</td>
</tr>
<tr>
<td>Medical facilities</td>
<td>0.149</td>
</tr>
<tr>
<td>Availability of infrastructure to host social and cultural events (theatrical plays. cinema)</td>
<td>0.084</td>
</tr>
<tr>
<td><strong>Career prospects</strong></td>
<td></td>
</tr>
<tr>
<td>Perspectives for professional career</td>
<td>0.325</td>
</tr>
<tr>
<td>Opportunities for attending postgraduate programs</td>
<td>0.211</td>
</tr>
<tr>
<td>Opportunities to continue studies abroad</td>
<td>0.152</td>
</tr>
<tr>
<td>Availability of exchange programs with other universities/institutes</td>
<td>0.108</td>
</tr>
<tr>
<td>Institution’s links with business</td>
<td>0.205</td>
</tr>
</tbody>
</table>

Table IV. Factor overall weights – students’ perspective at TEI/L
the links of the institution with businesses. Both of these sub-criteria are at the same preference level.

Table IV summarises the weights for all sub-criteria of each group. The usage of the presented weights can help in the development of a scoring model that will assist quality assurance departments in quantifying student responses to questionnaires taking into account student preferences.

**Recommendations – conclusions**

Following the detailed analysis of the questionnaire, recommendations can be made based on the students’ preferences. These could be taken into consideration by management in order to meet personnel and infrastructure requirements.

To begin with, teaching personnel could benefit from training to improve their communication skills as these criteria were seen of high importance between the students. Another suggestion could be to include evaluation of the communication and interaction skills in the classroom for teaching personnel as a main criterion for hiring personnel, in addition to the traditional evaluation methods that are based on professional and research experience. This measure could minimise the cases of indifferent teaching personnel. Secretariat should be run efficiently by a sufficient number of trained staff members that can provide accurate information on all aspects of students’ studies. Where library services are concerned, the availability of textbooks and journals is the main factor influencing the quality according to students. Concerning the curriculum structure student value practical/hands on experience which is in direct connections with market demand. Further, students believe that elective modules are quite important since they provide the opportunity to customise their studies and get an insight into areas of specialisation as early as possible. The location of TEI/L seems to be of concern for students since the transportation cost and the frequency of the service are important factors for them. Except quality of infrastructure for teaching and laboratories, subsidised catering and accommodation services are important for the majority of students. Finally, concerning carrier prospects, students value specialization of studies. Also, to better equip students, it is necessary TEI/L to offer postgraduate degrees in new subjects, enhancing the competitiveness of its graduates. To this effect, the TEI should strengthen its links with businesses and society with a twofold purpose: to attract new students and to provide graduates with better career prospects.

With this study, the issue of quality of the TEI of Larissa has been addressed in order to define the determinants and their respective weight in the overall quality assessment of the institution from a student perspective. The study also provides recommendations on quality improvement of the institution based on its findings. Applying the AHP method that has proven to be the most appropriate when surveys need to account for a high degree of intuition and subjectivity, the authors attempted to fill in the gap noticed in the literature on the subject of quality in the higher education sector as most studies do not look at quality determinants separately.

**References**


Further reading


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