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METHODS OF MEASURING QUALITY IN HIGHER EDUCATION

Abstract: The paper contains discussion of some methods of the measurement of higher education quality. This article consists of two parts. The first presents concepts of: quality, service quality, and service quality in education. The second part of the paper introduces two selected methods of the measurement of higher education quality: a model of SERVQUAL, and the quality index which can be used to create the rankings of academic institutions.

Key words: quality, quality of education, an indicator of quality, SERVQUAL, measurement.

1. Introduction

The quality of Higher Education (HE) is one of the major and most important problems in Polish academic society. The reasons of interest in this issue can be found in the increasing number of students from year to year. The other factor is the increasing number of private schools responding to the needs of the educational market in Poland, as well as the new specializations of studies or changes in the already existing curriculum. Another important thing is the development of the cooperation between Polish and foreign universities [Buchner-Jeziorska, Macioł (Eds.) 2003, p. 18].

Quality as a base for effective education has become also a priority for the countries of the European Community. The high level of education is the precondition for the development of society and the source of the improvement of the quality of life for all residents of European Union Member States [Doroszewicz, Kobylińska (Eds.) 2007, p. 452]. The essence of the issue is emphasized by numerous legal documents, curricula and strategies (for example The Lisbon Strategy, Bologna Documents, The European Higher Education Area Documents). Their aims are to ensure sustainable and balanced economic growth through investment in human capital (education is one of the most important issues in the concept of human capital) and to reduce unemployment, by the preparation of graduates for the labour market and by an increasing competitiveness of universities [Doroszewicz, Kobylińska (Eds.) 2007, p. 460].

The quality assurance system at universities of the European Community Member States should comply with the guidelines contained in the document (Standards and Guidelines for Quality Assurances in the European Higher Education Area) which was adopted by ministers at the conference in Bergen in 2005. According to that document in order to work on the quality of higher education services alongside external quality assurance procedures (agenda, committees) academic institutions should establish an internal system of evaluation. The new system should be based on monitoring, clearly defined principles of measurement and evaluation of institutions, their individual departments, and teaching staff. The accepted standards also contain general recommendations for developing the quality assurance systems of education under which pro-quality activities are responsible for universities. The educational institutions should also take into account opinions of external environments and students. Very important is to maintain the transparency of all activities to ensure the quality of education and enable accessibility to all information about the results of pro-quality actions [Morawski (Ed.) 2009, pp. 259–260].

Quality is defined as a property, the degree of excellence or value of an object or phenomenon. It is the sum of the features of the device, or a product, or the action that leads to it [Borys 1991, p. 17]. As defined in ISO 9000:2000, quality is the degree to which a set of inherent (existing in themselves, permanent) characteristics fulfills requirements [Hamrol 2007, p. 19].

The concept of the quality of service can be defined as the level at which service meets customer expectations and needs. The intentions of the pro-quality services are designated by the management of the organization and they are based on standards such as: customer satisfaction should be the result of professionalism and efficient implementation of service. Services should also be continuously improved and take into account social and environmental requirements. To make this possible the organization needs to pay special attention to knowledge of all their functions in order to satisfy the needs of the customer. Equally important is to determine the possible impacts on the customer and to ensure cohesion between the service functions and the expectations of clients [Kolman 2009, p. 363].

The quality of HE (higher educational services) can be seen as the creation of common standards and indicators applicable across the country (European Community) [Doroszewicz, Kobylińska (Eds.) 2007, pp. 453–454]. It can also be understood as: the perfection, peer review, performance, mission or culture. Perfection is manifested in timing at the consistency with the accepted standards. Reviewing focuses on the procedures which are necessary to ensure and maintain the quality of HE. Results are focused on the effect of education, and they relate to the differences in the pre-defined outcomes. Mission emphasizes the uniqueness of the university, which always tends to its own aim. The last approach is quality as a culture. In this case, the institution treats the system of evaluation as the fixed and permanent elements of academic culture [Wnuk-Lipińska, Wójcicka (Eds.) 1995, pp. 15–21].

The most important element of the level of education is the curriculum and the way it has been planned, executed and evaluated. The main role must also play: competence of teachers, the educational assessment of students and the material resources as well as their use [Doroszewicz, Kobylińska (Eds.) 2007, pp. 453]. Therefore the quality of education is matching activities to own aims which mostly relate to finance (the information for authorities about the way higher schools spend public funds), academic standards (the information for academic institutions, which monitor the level of education) or to the general public (the information necessary for the potential employers, candidates and students) [Żołądkiewicz (Ed.) 2000, p. 8].

The quality of education should be subject to continuous assessment, with the aim of implementing the educational policy, accreditation (checking the threshold standards which guarantee the level of education considered as a minimum), as well as continuous monitoring and improvement of the level of education by increasing the motivation to its progress, the continuous development of employees, and introducing internal quality assurance systems. All of these measures aim at: increasing the number of students, promoting good graduates (capable of learning new practical skills [Kamiński, Rządca (Eds.) 1997, p. 18]), strengthening the credibility and reputation of the institution and obtaining multiple and higher education funding opportunities. For the assessment instruments shall be deemed indicators and the qualitative opinion of business experts [Kruszewski (Ed.) 2000, p. 159].

The verification of the quality of education provided in HE institutions must be done on two levels: internal and external. The procedures for implementing the National Qualifications Framework are the basis of external evaluation which consists of the following models [Kruszewski (Ed.) 2000, p. 159]:

– licensing (a legal permission by the licencable institution when higher school meets the criteria),
– assessing the quality of higher education, (by comparing the results from research and standards),
– accreditation (checking whether the school meets the accreditation criteria),
– a review (the control of internal mechanisms of the quality).

In cases of internal control, most important is monitoring and self-assessment conducted by higher educational institution. Monitoring is a continuous observation, the method of proceeding. The aim of monitoring is to measure the level of the indicators in relation to standards. Monitoring can be understood as: the analysis of learning outcomes, the delays in obtaining a diploma. Self-evaluation is the preparation, development and assembly of materials and documentation about [Kruszewski (Ed.) 2000, p. 160]:

– the main goals of education,
– the guidelines for the creation and content of training curricula (with the number of classes and seminar hours),

- the conditions in which the universities function: size and equipment of classrooms, the availability of resources at academic libraries, and social facilities,
- the forms of training, the number of teachers and their achievements (actions enhancing competence, ability to design curricula of study, knowledge of modern methods and techniques of training),
- the organization of studies (based on information about the recruitment process, entrance exams, the number of candidates per place, the total number of students, the average time to study, study efficiency, expressed as a percentage of completion),
- the standards for evaluating students work (examination and credition criteria),
- the assessments of the quality of education (based on visitations, and the evaluation of the teaching staff by students),
- the methods of supporting the learning process through participation in scientific circles and programmes,
- the diversification of techniques, methods and tools of education – to highlight the role of innovation and modernity,
- the creation of opportunities for the individual schedule of studies and plans,
- the level of the internationalization of studies, expressed as the mobility of students and number of classes in a foreign language,
- involvement in programmes conducted aimed at cooperation with foreign and national institutions.

Self-evaluation can be made at the level of department, institute or the whole university. Its main task is to develop the goals and objectiveswhich the educational process should achieve [Buchner-Jeziorska, Macioł (Eds.) 2003, pp. 23, 24].

Therefore the internal system is focused on the learning outcomes for students and graduates of the institution. It evaluates the extent to which planned outcomes are actually achieved through the implementation of certain procedures [Morawski (Ed.) 2009, p. 260].

2. The measurement of the quality of higher education – selected methods

The continuous measurement of the quality of education guarantees maintaining a high level of education. The most commonly used methods of assessment include: an analysis of study programmes curricula, process of teaching and documents already existing, a comparison of performance indicators as well as testing candidates and graduates. The commonly used techniques for obtaining information on academic institution are interviews with both sides of the educational system and ananalysis of materials already collected (status of university, rector's and deans regulations) [Buchner-Jeziorska, Macioł (Eds.) 2003, p. 25].

College education level can be measured in many ways. One of them was developed in 1985 by A. Parashurama, V.A. Zeithamla and L. Berry's assessment

called SERVQUAL. The method is based on Likert scale (scaling is used mostly in the analysis of the quality and customer satisfaction measurement, which produces a set of terms and respondent answers in a five-point scale) and perceived service quality as a function of discrepancy between customer expectations and their perception of the service [www.inp.uni.opole.pl/~sztejnberg/komspol/servqual.pdf].

The basic assumption of the evaluation is the existence of five gaps [Łuczak, Matuszak-Flejszman 2007, pp. 343, 344]:

- the first shows a discrepancy between what the customer – the student – is expected to get and what the service provider – the university – considers important and satisfying for the customer. The size of the gap is the effect of the academic marketing research, communication, and the number of layers of the management at the university;
- the second – contradictions between the perception of the expectations of recipients and the physical features of service premises. The size of the gap is determined by: the perception of opportunities, the standardization of tasks, and the involvement of the quality services issues management;
- the third – illustrates the difference between the service quality specifications and the service which is actually delivered. The factors influencing the differences are: the ability to perceive a conflict between the expectations of students and schools, staff cooperation (teachers and administrator) as well as their involvement in work, matching technologies to operations, personnel evaluation system to monitor performance (control by the visitations);
- the fourth presents the conflict between the service delivered and promised. The size of the gap is caused by the tendency to over-promise and vertical communication;
- the fifth illustrates discrepancies between the expectations of listeners associated with studying and its perception. If expectations are greater than the perception, the quality is unsatisfactory. In the reverse situation, the quality can be regarded as surprising, if the balance of quality is satisfactory.

The last gap is considered the most important method of assessing the quality of services and it can be illustrated by the following formula [www.statsoft.pl/czytelnia/marketing/skale.pdf]:

$$S = \sum_{i=1}^{k} w_i (p_i - e_i),$$

where: S – subjective satisfaction with the product,
w_i – the weight assigned to that dimension of consumer services,
p_i – evaluation of the perception of the judiciary,
e_i – the customer's expectations to the given dimension of the service.

In order to rate the quality of services the research questionnaires are made by which the customers (students) communicate their suggestions for services. These questionnaires should include areas which have the most significant impact on the

quality of education. These are the external conditions like the actual material and human resources, robustness (the ability of accurate and reliable realization of the service), responsibility (the pace of reaction, support for students, the response to the comments), confidence and safety (the knowledge and courtesy of academic empolyees) and empathy (the concern for the customers) [Bugdol 2008, p. 210].

In assessing the quality of service it is possible to reject the expectations and to reduce the model to the following relationship (model SERVPREF) [www.statsoft.pl/czytelnia/marketing/skale.pdf]:

$$S = \sum_{i=1}^{k} w_i p_i.$$

The method for measuring the level of higher education may also be the quality index. This is the result of the determination of the main stimulants which have a significant impact on the problem. In assessing the academic units five criteria may be taken into account [Doroszewicz, Kobylińska (Eds.) 2007, p. 530]:

– the position and prestige of academic institutions,
– the scientific strength,
– the infrastructure and conditions for studying,
– the innovation,
– the internationalization of studies.

Each of the main criteria is composed of specific factors. The first group includes primarily the category of higher school (academic qualification, the preferences of employers who have pointed out the unit during the survey, and a selection of Olympic finalists measured by the number of these contests adopted outside the recruitment process). The strength of science is determined by: its own staff development, understood as the number of titles and degrees obtained by employees in a given year relative to the total number of teachers, degrees conferred, academic potential (the sum of points awarded by the Ministry of Science and Higher Education), the number of staff with the highest qualifications, publications included in Scopus, or the Institute of Philadelphia, citations and the number of students on third level studies, the accreditation of the honours degree and the number of outstanding employees who are members of the accreditation committee. Another component is represented by the availability of highly qualified teachers for students, the conditions for using the library resources (in printed and electronic form), the grade of computerization (the number of computer software available through institutional licenses), the opportunity of developing scientific and cultural interests measured by the circles and associations at the university. An important factor in this group is also the amount of sport at school and the number of places in student hostels. Innovation is conected with the possibility of obtaining external funding for research, the number of utility models and patents as well as participation of academic institutions in scientific research. The last factor is composed of the number of curricula and activities in a foreign language, students' exchanges, including foreign

academics, and participants of summer schools [www.perspektywy.pl/index.php?option=com_content&task=view&id=2661&Itemid=715]. The indicator of the quality level is reduced to the formula

$$Q_n = \sum_{i=1}^{5} \alpha_i q_i,$$

where: α_i – the weight for the *i*-th stimulant,
q_i – and value of the *i*-th stimulant.

Weights can be determined by among others [www.kpiontek.ae.wroc.pl/wielokr.pdf], the basis of expert knowledge and experience, as the impact of individual components is the same and by the method of analytical hierarchy decision-making process. They are designed to reflect the preferences in relation to variables describing the complex phenomenon, which is the quality of education. Scales should also satisfy the following properties [Dziechciarz (Ed.) 2003, p. 290]:

1) $\alpha_i > 0$;
2) $\Sigma_{i=1}^{5} \alpha_i = 1$.

Data may come from a survey questionnaire and the analysis of the already existing sources. If the quality of education is regularly measured then rates are obtained from it as time series. The analysis of time series enables to become acquainted with the nature of the phenomenon and to predict the quality. The presented method can be applied to a group of universities, which allows to create a ranking where higher schools are organized in order from best to worst. Ranking criterion is the level of education. The method used in the construction of ranking is called linear ordering. A necessary condition for its application is that the variables are normalized. Normalizing procedure could unify the units of each of the variables and the rows of their sizes [Dziechciarz (Ed.) 2003, p. 251]. The most commonly used linear methods are standardized sum and the method of development pattern. Both methods enable the pattern, antipattern and measurement pattern of development. The pattern is constructed to satisfy two properties [Dziechciarz (Ed.) 2003, p. 292]:

– the higher the level of phenomena, the higher the value of measurement development,
– the measurement development values are within the range [0, 1], where the pattern is 1, and antipattern 0.

It is assumed therefore that the best univerisity gets the highest score (1) [www.ki.pan.pl/index.php?option=com_content&view=article&id=67].

Rankings are the widely used method of analysis of education. They can assess the institution in many aspects (Shanghai Rankings, Times Higher Education, QS, Prospects and the Republic), formed on the basis of bibliometric (Taiwanese, Leiden University), Internet resources (Webmetrics), the effects of research (SCImago), or be based on assessment of graduate programmes and careers (Financial Times). The rankings show the condition of education – a high position affects the reputation of

universities in the world and in the country. The highest rated institution becomes the benchmark for other universities. Ranking also shows which of the components should be improved [Siwiński 2010].

3. Conclusions

Regular self-evaluation and measuring the quality of higher education is helping to identify the strengths and weaknesses of education. Without that knowledge it would not be possible to continuously improve the level of education and thus to strengthen the competitiveness of the academic units on the market of educational services. The article has presented two chosen methods of the measurement of education: the SERVQUAL model and the quality factor. The first method examines the discrepancies between customer expectations and their perception of the service, the second assesses the academic unit according to the five main criteria: the academic position and prestige of universities, the scientific strength, the infrastructure with the conditions of studies, and innovation and internationalization of studies.

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METODY POMIARU JAKOŚCI KSZTAŁCENIA NA UCZELNIACH WYŻSZYCH

Streszczenie: W artykule omówione zostały wybrane metody pomiaru jakości kształcenia wyższego. Artykuł składa się z dwóch części. W pierwszej w sposób syntetyczny przedstawiono pojęcia: jakości, jakości usług oraz jakości usług w edukacji. W drugiej części zaprezentowano dwie wybrane metody pomiaru jakości kształcenia wyższego: model SERVQUAL oraz wskaźnik jakości będący podstawą budowy rankingów instytucji akademickich.

Słowa kluczowe: jakość, jakość edukacji, wskaźniki jakości, SERVQUAL, pomiar.