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Competitive factors of higher education institutions

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Abstract

The most important task of colleges and universities is to work efficiently as a so called knowledge factory. Essential part of this task is to balance the input and the output of higher education in order to meet labour market expectations. This is not only the aim of the institutions, but also serves as a key to their operation. In the long term they can attract students to apply if they guarantee to provide competitive knowledge and expertise to them. Last year's changes have the impact on some professional fields in the institution known as the cultural center of the Western-Danubian Region (Hungary). The research can serve as a good mean and source of information for the would-be-applicants and young jobseekers; furthermore it can contribute to the quality assurance and developing work of the university.

Keywords: *Competitive factors, higher education institutions*

1. INTRODUCTION

The world is in a continuous change. People lived according to different norms in different periods, with the development of technology, the accelerated time people's learning and knowledge have required/demand a continuous change. Learning and knowledge have played/play an accentuated role in the development and everyday life of mankind. Education, and especially tertiary education is still in a key position today, when in its strategies Europe is laying emphasis on the fact that knowledge and innovation could be the driving force of competitiveness. (Tamándl 2012)

The world's tertiary education – including the Hungarian tertiary education system as well – has undergone a huge change in the last two decades. Functions which are said to be traditional have changed significantly, the supply range has transformed – it is offering new things for both the students and the teachers -, it is playing different roles in the life of people, professions, careers, as well as in that of the regions. (Fábri 2005) The carriers of knowledge are the institutions of higher education. Encouraging innovation and innovation have priority, because

they contribute to development. That is the reason why it is necessary to create harmony between the needs of companies and the output of educational institutions. (*Filep 2009*)

One of the most important structural problems of the national tertiary education is the weakness and disability of the relationship between the education and the labour market, the inadequate nature of the information flow between the two spheres. The demands of the labour market are not built in the content, output expectations and requirements of courses offered by the universities, the colleges, although there is a need for the information systems revealing the labour market position of graduates, for objective ranking methods and for conveying information about the labour market to the students. Efficiency, economy, transparency and traceability are irreplaceable elements of the operation of higher education institutions in the 21st century. The Hungarian higher education institutions can become competitive in the uniform European Higher Education Area only if they necessarily employ the latest ICT-based (Information and communication technology) services. The planned activities make possible to modernize the control and management systems of the institutions in order to make them efficient and flexible, with the support of IT devices, moreover, they can help the efforts aiming at the introduction of modern, integrated services. They can help the development of management techniques and process tracking systems which allow for the students to familiarize themselves with the labour market forecasts in a systematic way, and they also support the institutions and the students in the getting to know the definitely changing demands and requirements of the labour market. (*NFU 2009*) In Hungary, the management control systems formed in the private sector are beginning to “flow” into the higher education institutions, but due to the external-internal uncertainties it is difficult to plan, although it would be really useful.

Following from the previous ideas, the successful employment of entrants independently of qualifications and location is a serious challenge, so the advantages of work experience, practice-oriented courses will become more appreciated, that means it will be more appreciated under what circumstances and in which period of the studies the demands of the employees and the employers (or their representatives) can meet, and the same applies to their demands as well. The marketable qualification is one of the basic criteria of a successful education system. One of the most important phenomena is that demands of the labour market are rapidly changing, so it is an essential viewpoint in what way and how quickly the participants of the education system can respond to these rapidly changing demands. The availability of grounded information is important for them to be able to make decisions. Taking all the above ideas into account the aim of higher education institutions is to retain and improve their positions achieved, and their further task is to provide efficient help to participants of courses and further trainings so that they can meet their targets. In order to realize it there is a need for system capable of objective feedback which provides results accepted by everybody, and contains both input and output indicators. There has not yet been a concept born which could have fulfilled these challenges. However, the results of the GCTS (Graduate Career Tracking System) suggest that it offers appropriate quality indicators in the output side, where there have not been indicators so far, with the help of which it is possible to create a complex model.

The .graduate career tracking system makes it possible to collect record, process and analyse data about the labour market movement of graduates, and their specified career information. The system is able to inform the prospective students, the applicants and the employers about the chances of employment and feedbacks given about the trainings by graduates of institutions, disciplines and majors. Career tracking can cover groups related to bachelor-, master- or doctorate courses.

Trends influencing the application to higher education institutions can also be identified by GCTS student queries. By using the results of GCTS in the decision making mechanisms an institution can form its portfolio of courses, its competitiveness and the satisfaction of the actors of the labour market (such as the future employer of the graduate students). The survey of satisfaction should be made at regular intervals by the institutions, as it is already done by the majority, as part of the quality assurance. During strategy development these surveys can be employed as inputs in the situation analysis and monitoring phases to determine strategic directions and targets. An advantage of the survey is that it gives means to the higher education institutions which measures the satisfaction of two key target groups, the students and the employers. In addition, its featured advantage is that the viewpoint of existing clients, customers, namely the students, is added to the process of strategic development. An organizational culture open to and observing internal operation, opinion is going to be formed, with which the institution can take a step towards the establishment of the student organization. Besides, it can be a device to utilize internal resources, ideas, innovation, and it can also increase the soundness, the acceptance of the strategy. The limit of the survey is that it can provide the institutions and the decision-makers with a misleading result in case of a possibly wrong compilation of the questionnaire. *(OFI 2011)*

In the present higher education and market-oriented medium, higher education institutions also have to keep up with the changes which they have to be able to measure and then they need to respond to them as soon as possible. In my monograph I have examined Széchenyi István University within the framework of the graduate career tracking research. I have reviewed the competitiveness factors and output indicators characteristic of higher education institutions which can serve the creation of the institutional strategy, together with the development of quality assurance. My choice is justified by the fact that the examined university was the first to be established in Hungary in the new millennium, and it is one of the fastest growing institutions with one of the biggest labour market background. This institution with its exemplary management in Western Transdanubia is acting in eight training areas in order to meet the challenges and to do well in the increasing competition of national higher education.

Due to their huge numbers, the competition between the institutions - both in space and size – is definitively considered to be lively on the relatively small Hungarian higher education market. The regional commitment of the institutions on the countryside are supposed to be higher than those in Budapest where the institutions have significant national scope and they also have needs to appear at an international level. *(Kovács 2012)*

2. RESEARCH METHODOLOGY

The choice of the topic of this research was greatly inspired by a graduate career tracking research launched in 2006. The research is a new type of nationwide survey, which motivated me even at my application to the doctoral school, as it does not have considerable traditions in Hungary, nor it has a significant literary background. In contrast with this, the research of rankings has remarkable professional background and methodology, but so far no attempt has been made to examine the connection of the two topics, and to use them together for measuring the competitiveness of universities.

My monograph consists of three chapters. In the theoretical part I am dealing with the topicalities, trends, models, competitiveness factors of European tertiary education, as well as with the presentation of the effects and methodology of rankings. In this context I am talking about the advantages and disadvantages of rankings, furthermore, I am examining the situation of Hungarian higher education institutions and their positions in the rankings. In the second part I am presenting the graduate career tracking, its international and national context, and within the framework of the GCTS research of Széchenyi István University I am illustrating the output indicators including student feedbacks. Finally, in the third chapter I am setting up an objective competitiveness model which can hopefully be used in the measurement of the competitiveness of higher education institutions in the future.

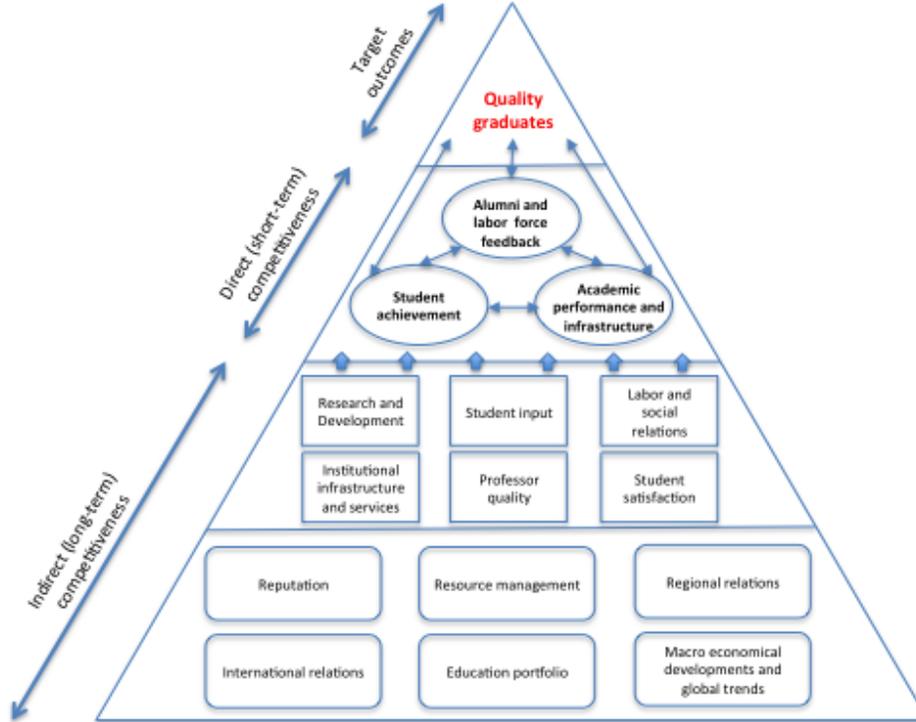
Széchenyi István University has been monitoring the geographical structure of applications, and their temporal evolution since its establishment. In the Higher Education Act there are more points referring to the introduction of the student career tracking system. I started to form the career tracking examination of the present, graduating and graduated students at Széchenyi István University in 2006, prior to the accepted legislation, keeping in mind the practice of previous researches. One of the aims of the questionnaire surveys to be done among the present and former students of Széchenyi István University was to establish a continuously expanding database suitable for observing students' careers and tracking their temporal changes, displacement. This database gives opportunity to carry out integrated, dynamic examinations, and after the temporal run-out of the structure made up of more elements, it can function as a panel study in the case of certain subpatterns. Each of the questionnaire surveys presented above was made by the self-report method. On the basis of the nature of data collection I paid attention to the length of the questionnaires on the one hand, and on the other hand, to the fact that the filling-in process should be easy and clear for the students. In order to achieve this, the questions and the topics of the questionnaire were drawn up in way that it is possible to fill it in in 5-10, or a maximum of 15 minutes, on the other hand, the simplest possible interviewing techniques were used (single choice, multiple choice, preference choice, simple four- and five-point scales). The questionnaires used in the examination were compiled in a way that they can give the widest possible opportunity for the comparisons and for carrying out longitudinal analyses. On the basis of the above ideas I compared the collected and analysed data, in the case of first year students, as well as in the case of graduating and graduated students. I used variance analysis and linear regression to set up explanatory models.

From the nonparametric tests I used the chi-square tests in the analysis. During the formulation of the results, in most of the cases I used the graphic, while in other cases the tabular visualisation to graphically display the data and connections.

More and more theoretic and practical research is dealing with the competitiveness of countries, regions, both internationally and nationally. There are several examples showing that – besides enterprises and nations – the question of competitiveness today is present in tertiary education. There is a competition for the students, for the teachers, for the R&D work and for the finances necessary for the education. In the previous year I tried to set up a model suitable for the measurement of university competitiveness on the basis of a special methodology, the pyramid model of competitiveness by Lengyel (2010). The third chapter is presenting the further consideration, methodological elaboration and test of the model. In the model I mostly relied on the textual accounts of the EEMI, the Educatio Nonprofit Kft., the OTDT, the TEMPUS Public Foundation, the OH, the FTT and the higher education institutions. While I was setting up the model, from a methodological point of view I found it important to base it on an economic theory, to make it consequent from a mathematic-statistic point of view, to direct it to the method of achieving competitiveness and the future development of competitiveness. Among the further aspects I considered the fact that it should be suitable for the comparison of higher education institutions, and should be useful for the purposes of scientific research and practical application. From a technical aspect I considered transparency, extensive nature, authenticity, usability (informal and research) and proportionality important. The tertiary education competitiveness model has a greater spectrum than the existing – either Hungarian, or international – rankings. Taking the above points into account I classified the 44 indicators into 3 basic categories and 5 basic factors in which the indicators of the trifold unity of education, research and service. The basic categories contain the student-, alumni- and labour market satisfaction, and I characterized each of the basic categories and the basic factors with more indicators. I carried out the examination with eleven selected institutions. The three basic categories and the five basic factors were each characterized by more indicators. I summed up and took the average of the standardised (transformed to a scale between 0 and 1) values of the indicators belonging to the same basic category (and basic factor). The final static measurement of competitiveness was carried out by considering the indicators of the basic categories and basic factors with the methodology specified weighting, and then the final result was developed by transforming the resulting values between 0 and 100 once more.

Although no comparative examination of universities, higher education institutions have been made on the basis of the method, I still consider it a model which can have results in national and international researches as well by collecting the data if it is used systematically. All this can mean the possibility of the comprehensive expansion of the research.

Fig. 1: Ranking of higher education institutions on the basis of the competitiveness model



Source: Filep-Kovács-Tamándl 2010.

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3. RESULTS OF THE RESEARCH

In recent years, similarly to other sectors, competition has also appeared in tertiary education. It is marked by the fact that besides state institutions more institutions (mainly private, non-profit, and religious ones) have been established. Institutions have made attempts to refresh the range of their courses with new methods (distance learning, e-learning). Parallel with this, as a result of socio-economic trends majors, professions have been appreciated and depreciated, new fields of professions have been given more attention. Students' expectations have been transformed and institutional services, institutional infrastructure, distance from the place of living, and future possibilities of work close to the institution have appeared with greater emphasis in the selection of institutions.

Institutions on the countryside have to struggle with the additional difficulty of a bigger significance given to institutions in the capital by the professionals. What aspects could or can be behind this statement? The number of institutions on the countryside has decreased while

the number of state institutions has remained practically the same, the number of institutions in the capital has slightly increased, which can be explained by the integration. The leading role of institutions in the capital is permanent considering the number of students (nearly 40% of students study in the capital) and the diversity of courses, furthermore they can put pressure on politics forming tertiary education due to their importance. (Rechnitzer 2009)

Under the above circumstances, I have undertaken the task to verify with the competitiveness model the fact that rural institutions can compete and sometimes stay ahead in the competition of the universities in the capital.

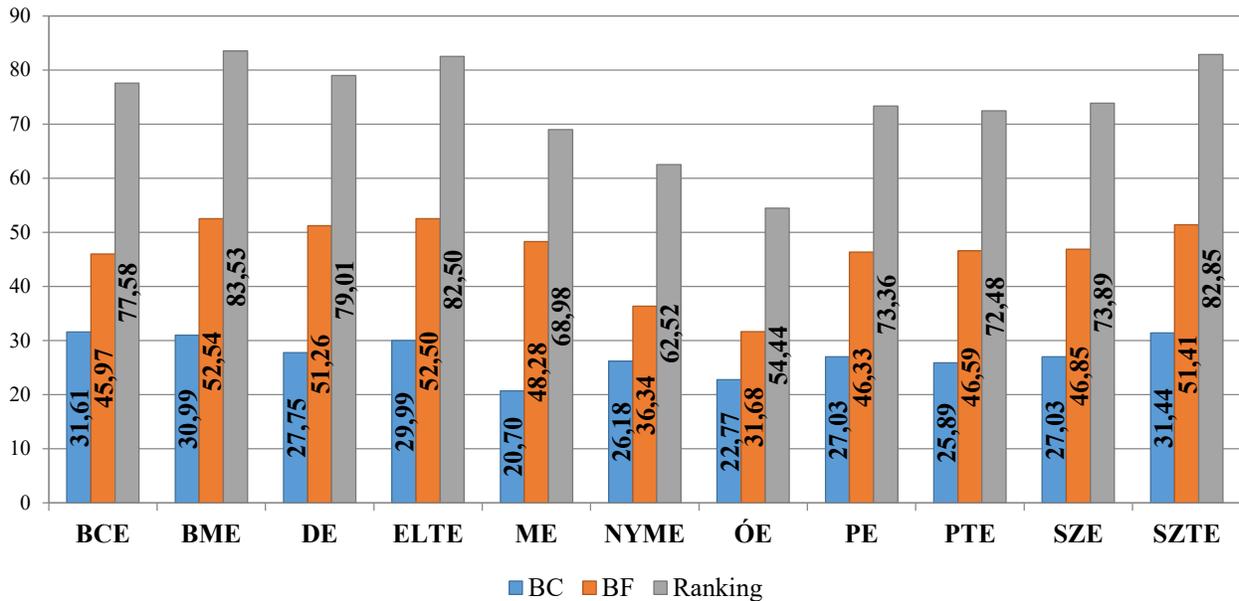
Previously we had a review of the competitiveness indicators of the 9 selected universities in detail; furthermore, their positions on the basis of the tertiary education competitiveness model can also be seen. The cumulated results are included in Table no. 1 and Figure no. 2.

Name ¹	BCE	BME	DE	ELTE	ME	NYME	ÓE	PE	PTE	SZE	SZTE
Basic categories	1.	3.	5.	4.	11.	8.	10.	7.	9.	6.	2.
Basic factors	5.	1.	4.	2.	9.	10.	11.	7.	8.	6.	3.
Competitiveness (total)	5.	1.	4.	3.	9.	10.	11.	7.	8.	6.	2.

Table 1: Position of higher education institutions on the basis of the competitiveness model

¹BCE – Corvinus University of Budapest; BME- Budapest University of Technology and Economics; DE – University of Debrecen; ELTE - Eötvös Loránd University; ME – University of Miskolc; NYME – University of West Hungary; ÓE – Óbuda University; PE – University of Pannonia; PTE – University of Pécs; SZE - Széchenyi István University; SZTE – University of Szeged

Fig. 2: Ranking of higher education institutions on the basis of the competitiveness model



Source: own work

On the basis of the results the following statements can be formulated:

- On the basis of the competitiveness factors the Budapest University of Technology and Economics is at the head of the list (83.53 points), so on the basis of the survey the BME is the most competitive Hungarian higher education institution.
- The best institution gained 83.53 out of 100 points, which is 53.4%, more exactly 29.08 points bigger than the lowest value.
- Besides the BME, the University of Szeged and the Eötvös Loránd University could get the second and third places with 82.85, and 82.50 (szóköz) points.
- The order of results measured in the basic categories and in the basic indicators can sometimes differ in the institutions. (For example it is interesting that the BME is on top of the list despite the fact that examining the basic categories it has only the 3rd position.)
- In the case of the size comparison Corvinus University of Budapest is the most competitive among the institutions with lower number of students than 15000 (BCE, ME, NYME, ÓE, PE, SZE). However in the case of main factor Széchenyi István University has the best parameters.
- If we examine the universities (BME, DE, ELTE, PTE, SZTE) with higher student numbers than 20000 we can see similarities and highly significant differences. Until Budapest University of Technology and Economics, University of Szeged and Eötvös Loránd University has similar competitiveness than University of Debrecen slightly, University of Pécs in both cases is lagging from the main category. Among the studied universities in

the main category University of Szeged, in the main factors Budapest University of Technology and Economics provides the best performance.

- Considering the comparison based on size, in case of the North-Transdanubian institutions the balance is tilted in favour of Széchenyi István University, the NYME has the weakest indicators among all the examined institutions both in case of the basic categories, and also the basic factors. SZE and the PE have nearly the same competitiveness in case of the basic categories, so the competitive advantage of SZE can be experienced in the indicators of the basic factors.

Data collection meant the most difficult task during the application of the tertiary education competitiveness model set up on the example of the pyramid model. Many data cannot be found at institutional or national level, which makes the analysis and the testing of the model more difficult. The time series study, related to a longer period, would provide more information about the processes, but in that case less data can be taken into consideration and the data selection at the suitable level has to be well devised. Thus the resulting analysis reflects a static state, which shows the given state projected to the eleven higher education institution, but the time series study is necessary and it has to be carried out in the future.

There have been and there are still competitiveness studies carried out in a lot of fields (comparison of countries, regions, cities, professional fields, enterprises, etc.) in the national and international literature, but it is a novel attempt to compare universities, higher education institutions on the basis of indicators, and to define and determine their competitiveness despite the existence of several tertiary education rankings.

To sum up, it is clear on the basis of the data of higher education institutions that the increase and competitiveness of the Hungarian tertiary education differs from institution to institution and it changes unevenly. On the basis of these ideas I believe that it is especially important for experts and certain offices and administrative organizations (EEMI, Educatio, ÁSZ, KSH) to cooperate in the interest of the success of future comparisons, as exact and extensive samplings, surveys and analyses are inevitable in order to get authentic data.

4. CONCLUSION

In the first chapter, using the international and national literature I dealt with the situation and trends of tertiary education, I analysed its models, and I examined the interrelation between universities and regionalism, and the role of universities in the development of regions.

During the study of this topic I concluded that the change in the economy and in the society, namely the phenomenon of globalisation had an impact on the segment of tertiary education and resulted in its transformation. The European institutions are increasingly falling behind the American institutions, and there are considered as an example when guidelines are set in order to make the European tertiary education and research system more effective. It can also be stated that the European higher education institutions and European states consider falling

behind as a real danger, and they are trying to respond to the problem which is shown by the Bologna process, and by the Lisbon programme aiming at the establishment of the integrated European Research Area. The economic forms, the environment of Hungarian universities must be built upon market coordination in case they want to work successfully. (*Barakonyi 2009*) I pointed out that the higher education institutions are taking an increasingly bigger role in the development of their regions and cities, in turn, the the cities and regions are also making attempts to do their best for the economic, social and cultural development of tertiary education. From the point of view of the university regional role-taking is important because in this way it has the opportunity to show its contribution to the civil society, and can verify its values formed by education and research with which it repays the investments of society. However it must be noted that not every Hungarian higher education institution has only regional embeddedness. The greater institutions in the capital (ELTE, BME, BCE) have nationwide coverage and relationships, while regional binding is characteristic of the rural institutions.

According to the prevailing international stream of the educational policy of the 90's the aim was to create a managing and service providing university, while nowadays the establishment of an entrepreneurial and regionally bound university is emphasised. The entrepreneurial universities have built up different strategies to contribute to the regional developments by their scientific abilities and to increase their revenues. In contrast, the regional universities are characterized by the fact that their students come from the region and find employment here; moreover, they try to satisfy the needs of the economic sector of the region with their training and further training programmes, R&D and innovation activities, their participation in development programmes. All the evidence is showing that universities of this kind will be the institutions of the future, and it was verified by exact examples as well.

Following the clarification of the notions of competition and competitiveness, regional competitiveness was explicated the characteristics of which are defined the characteristics of the competition between regions in merit. The regions are striving for establishing the relatively high level of income and employment. Their competitiveness is not for their own sake, it is aimed at the improvement of the welfare, living standards and quality of life of the people who live their, which is based on the ability of innovation. The competitiveness in tertiary education seemed substantially more difficult. After the analysis of the literature, I presented the models, rankings which are the most suitable for measuring the competitiveness in tertiary education, then their causes, their histories, the best-known international and national examples, and their methodological peculiarities. As a reflection it was proved that unlike foreign models there are not any lists in the Hungarian tertiary education which can give full details about the institutions, so in this form it can be suitable for determining competitiveness in a moderate form and with reservation.

The second and third chapters of my monograph gave details about the methodological questions of my research, and about the analysis of the research data. The aim of the research was to find appropriate answers to the hypotheses. On this basis, I made a research into how

the results of GCTS can be amalgamated with university rankings, whether the indicators for measuring competitiveness can be found in the results, and whether the model of the competitiveness in tertiary education set up on the principle of the pyramid model of Lengyel is suitable for these measurements.

In the centre of my study, the results, indicators of graduate career tracking, and the study of the competitiveness in tertiary education can be found. I tried to insert the values from the graduate career tracking into the competitiveness indicators, which make it possible to have a look at the higher education institutions from a particular viewpoint, through the eyes of the students and alumni. With the help of the model it can be seen with what aims and motivation young people make their applications in the mass higher education, what they can get in the institutions, and what opportunities, expectations they are facing after leaving the education system, and how they can meet them. The findings of the indicators of satisfaction, education, research and service can show the positive and negative sides of the quality factors of the institution, and can be used as a perfect basis for setting up a competitiveness model. I presume that I have achieved my main research aim during the study, in addition, I could present and test a model which can be worthy of measuring the competitiveness of universities.

In summary it can be said that the GCTS survey offers a unique possibility to reveal the labour market position of young graduates, it has an indisputable national significance, and it points at young people's social background and lifestyle, labour market opportunities, intention of further trainings, and with the annual repetition of the survey, there will be a possibility to follow up the tendencies. It is not easy to find the way, it requires considerable efforts from leaders, teachers and researchers as well. (*Szekeres 2008*) The positive feedbacks of the survey prove that universities play an important role in the development of the human potential of the cities and regions, and through this in the increase of the efficiency of the economic. From the point of view of representativeness and authenticity, large-scale feedbacks are all the more important, which can be guaranteed by the alumni initiatives. The establishment of alumni organizations is not only advantageous in relation to GCTS, as its social capital can be turned into real capital, which can have an impact on the operation and future of the institution. Tertiary education needs to be changed in many ways in Hungary, a new Higher Education Act is being made in connection with which ideas, thoughts can be read from several aspects and sources. I am convinced that GCTS, the (output) data and feedbacks of graduates are indispensable for the institutions. This is the serious standard of institutional quality assurance because it is proved that there are not any authentic rankings without output indicators built upon unified methodology.

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