Benchmarking in Czech Higher Education

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Abstract

The first part of this article surveys the current experience with the use of benchmarking at Czech universities specializing in economics and management. The results indicate that collaborative benchmarking is not used on this level today, but most actors show some interest in its introduction. The expression of the need for it and the importance of benchmarking as a very suitable performance-management tool in less developed countries are the impetus for the second part of our article. Based on an analysis of the current situation and existing needs in the Czech Republic, as well as on a comparison with international experience, recommendations for public policy are made, which lie in the design of a model of a collaborative benchmarking for Czech economics and management in higher-education programs. Because the fully complex model cannot be implemented immediately – which is also confirmed by structured interviews with academics who have practical experience with benchmarking –, the final model is designed as a multi-stage model. This approach helps eliminate major barriers to the implementation of benchmarking.

Keywords:
benchmarking, higher education, economics and management faculties.

1. Introduction

The growth of benchmarking in higher education reflects the pressure regarding continuous quality improvement, increased performance levels as well as the increased diversification of higher education (Burquel and Van Vught 2010). This growth is also due to changes in national policy in the field of education (Murdock et al. 2014; Honingh and Urbanovič 2013), for example the Bologna Process, and the need for an effective evaluation of public policies in education. The transition to mass-oriented education systems in different countries, the globalization of educa-

tion systems and the consequent increase in competition in the industry have also had a major impact. Last but not least, there is the increased influence of the universities themselves, which have become major global economic players.

From a practical management viewpoint, benchmarking represents "soft" performance-management instrument. Performance measurement and performance management are typical New Public Management tools that need to be implemented very carefully in any, and especially in transitional, conditions (Vries and Nemec 2013). Existing experience indicates that in less developed countries the performance-learning process should start from benchmarking and not directly from strict performance-financing schemes (Nemec et al. 2008).

The existing literature lists very many benefits of benchmarking as a "soft" (focusing on comparing and not directly on concrete results) tool and incentive for improving performance. Benchmarking helps to diminish performance differences between organizations (Van Helden and Tillema 2005, 341), identifies of the current state of the organization (Burquel and Van Vught 2010), promotes cooperation between universities and networking (ENQA 2002), sets standards (ENQA 2002), stimulates the need for change (Naufal 2012) and continuous improvement of one's own processes (European Centre for Strategic Management of Universities 2010), identifies best and good practices (Unesco New Papers on Higher Education 1998), helps to set goals (Závada et al. 2006), supports continuous learning (European Centre for Strategic Management of Universities 2008a), helps to create databases (European Centre for Strategic Management of Universities 2008a) and represents a means for monitoring and accountability (Jackson 2001) and for the improvement of quality, efficiency and cost savings (Cahlík and Marková 2009). The risks of benchmarking compared to other performance-management instruments are rather marginal – its typical mistakes, like too much emphasis on quantitative indicators (Jackson 2001), limited quality and validity of data (McKinnon et al. 2000), little use of external data (Stella and Woodhouse 2007), data overload (European Centre for Strategic Management of Universities 2010) and lack of uniformity of methodologies (European Centre for Strategic Management of Universities 2008b) do not create so many risks and pervasive effects as other performance-management instruments, and the costs of implementing benchmarking are normally not too high (do not outweigh potential benefits).

In the Czech Republic, benchmarking has been described in detail for particular municipal areas (e.g. Plaček et al. 2014, Špaček, 2014). In the area of higher education, however, we have encountered a significant lack of resources. Because of large potential benefits of benchmarking we feel that more focused attention on the issue of benchmarking can contribute to improvements in the quality and efficiency of Czech higher education, and with this article we want to provide one important input for the area.

The paper includes an introductory text analyzing existing experience with benchmarking at the university level as well as two core parts. The first core analytical part (chapter three) is based on primary and secondary research in the Czech Republic with the aim to answer the main research questions of this article as follows:

1. Do Czech higher-education institutions realize benchmarking?

2. If yes, what kind of benchmarking is realized (competitive or collaborative)?

3. What are the main driving factors and what are the main barriers with respect to development of benchmarking activities in the Czech higher-education environment?

4. What are the attitudes to the more comprehensive implementation of benchmarking in the Czech higher-education environment?

The second core part (chapter four) responds to the discovered fact that collaborative benchmarking is not realized today in the Czech higher-education environment, even though it should be so. To support the implementation of future benchmarking activities in Czech higher education we deliver the policy goal of this article: we propose the model of collaborative benchmarking (system of indicators) for Czech higher-education institutions (particularly for the faculties delivering economics and management studies), and we discuss possible ways how to implement it in practice. Our model respects the existing formulated priorities of the involved actors and is designed as a multi-stage model, respecting the fact that the full model cannot be implemented immediately because of several practical reasons, especially because of too high costs to collect all needed data.

2. Benchmarking in higher education

The publication National Quality Agency defines the benchmarking of universities as follows: "Benchmarking is a learning process whose basic assumptions are trust, understanding, choice and adaptation of the best practices for one's own improvement" (ENQA 2002, 7). Emphasis on the learning factor is also found in the definition submitted by Ossiannilsson (2012, 19): "Benchmarking is an internal process, which aims to increase organizational performance through learning from organizations which perform better." Stella and Woodhouse (2007, 13) put emphasis on the formalization of the benchmarking process: "Benchmarking is the process of identifying standards which had always been done informally. The point of benchmarking is to formalize these processes in order to achieve better performance."

Despite this, the definition of benchmarking has undergone a bit of evolution. We can present a new approach to the definition of benchmarking according to ESMU, which presented the following concepts: "Benchmarking is a diagnostic instrument, a tool for self-improvement, the process of collaborative learning and

ongoing self-evaluation focused on the management of work processes" (European Centre for Strategic Management of Universities 2008a, 35).

A refinement regarding what benchmarking is, and what it is not, is provided in the following table.

Table 1
What Benchmarking is, and What it is not

Benchmarking is:	Benchmarking is not:
Understanding the process. Data collection is secondary.	Compensation for rational thinking.
A process based on cooperation and mutual learning.	A closed process.
Sharing strategic interests.	Mere data collection.
An effort to achieve benefits for all involved.	A blind focus on quantitative indicators which results in the loss of the big picture.
The process of change and an identification of future goals of the organization.	A creation of League Standings.
A tool for self-awareness.	A mechanism for simply reducing costs.
	A panacea for the problems of the organization.
	A unified scheme which functions like a cookbook.
	Mechanical reengineering.

Source: Author's work based on European Centre for Strategic Management of Universities (2008b), European Network for Quality Assurance in Higher Education (2002)

Benchmarking in some of its implicit forms has always been part of the management and the achievement of the quality of universities, for example different forms of peer review and peer evaluation of workplaces. All of these activities can be seen as some form of benchmarking. Burquel and Van Vught (2010) also note that there is still no comprehensive theory concerning the application of benchmarking in higher education. Most of the concepts are taken from other industries and adapted to the needs of specific applications.

In the Czech environment, benchmarking in the field of higher education has been dealt with, for example, by Závada et al. (2006) and Plaček (2014). These authors present a summary in their articles of the current theories of benchmarking, and based on the review of literature, they show its applications in the Czech Republic as well as in other countries. The following articles focus on the views of academic officials surveyed regarding empirical benchmarking and the possibilities of its application in the university environment (Plaček et al. 2015). Cahlík and Marková (2009) was also involved in the experiences of administrations with benchmarking, discussing the influence which operating in a quasi-market envi-

ronment, which universities do, has on the willingness to engage in benchmarking. This problem is illustrated by means of game theory.

Foreign publications that we can mention include Ruben (2007), Kelly (2001), Levy and Ronco (2012), Hoffman and Holzhuter (2012) and Secolski and Denison (2012); these authors base their work on the general theory of benchmarking and discuss the possibilities of its applications in higher education in the United States and Great Britain.

Very few scientific studies have been aimed at evaluating the results of the implementation of this instrument in the university environment; however, we can mention, for example Arnaboldi and Azzone (2004) and Agasistia and Bonomia (2014), who describe the experience of collaborative benchmarking at Italian universities, as well as Nazarko et al. (2009), who describes a failed implementation in Poland, and a general evaluation of the importance of benchmarking in the UK, which is presented by Jackson (2001).

One important source of information is the methodology for the implementation of benchmarking and audit reports relating to the implementation of this tool in the management of universities. There is a considerable information regarding the experience of Australia, for example. We can cite the methodology in *Benchmarking: A Manual for Australian Universities* (Mckimonn et al. 2000) and the audit report *Benchmarking in Australian Higher Education: A Thematic Analysis of AUQA Report* (Stella and Woodhouse 2007). Another large part of the publications in this area was contributed by the European Centre for Strategic Management of Universities (ESMU): *A Practical Guide to Benchmarking in European Higher Education* (European Centre for Strategic Management of Universities 2010), *A Practical Guide to Benchmarking in European Higher Education* (European Centre for Strategic Management of Universities 2008a) and *Benchmarking in European Higher Education: Findings of a Two Year EU Funded Project* (European Centre for Strategic Management of Universities 2008b).

2.1 Selected benchmarking projects in higher education

The first project of benchmarking in the field of higher education took place in 1991 in the US; it was initiated by The National Association of College and University Business Officers (NACUBO). In describing the experience of the US, we draw mainly from the analyses in Alstette (1995) and Unesco New Papers on Higher Education (1998). Both publications describe the benchmarking project initiated by NACUBO in 1991. The pilot project involved some 150 faculties and universities, examined about 40 functional areas and utilized 600 indicators. An important role was played by consulting firms, for example Coopers and Lymbrands, who acted as consultants for the project. Applications in the field of universities were associated with other concepts of quality management, such as TQM (Total Quality Management) and reengineering. The project also involved a Canadian university. The proj-

ect scope was so broad, according to information, that even researchers from the above studies, did not manage to describe all of the areas in the literature. Despite the criticism, which included accusations regarding the cost of the project, the high level of data aggregation, imprecise definitions regarding the responsibility for the implementation, a lack of experience within the academic community and a lack of information about individual university departments, 100 subscribers of the potential group of 1500 still remained after the pilot phase of the project. The benchmarking project NACUBO focused on the following areas: academic relationships, commitment, fees, alumni relations, bookstores, budgeting, departments of science and research, maintenance, financial assistance, food, financial management, human resources, technology, procurement, risk management, student debt, registries and IT, student housing and campuses. Data was acquired externally, internally or within the framework of the original research. Internal data sources were mainly internal database data, data from libraries and private publications. External sources of information were mainly associations of universities, academic field publications, journals, joint seminars and workshops. The basic methods of the original research were telephone research, questionnaires with feedback and networking services from external agencies which provided data and analysis. Simultaneously along with the project NACUBO, more specific and detailed projects were conducted by the following organizations: the Association for Continuing Higher Education and the American Assembly of Collegiate Schools of Business, as well as other individual projects. In 1993, a group of 21 universities founded the American Quality Consortium. The result of the activity of this institution was a methodology for comparing universities while assessing the Baldridge Quality Award in Education.

In the period when the US conducted benchmarking projects, the same was happening in Canada. The main motive was the release of the first rankings of Canadian universities in the magazine *Macleans*, which sparked a wave of disagreement among the universities themselves and attempts by local governments to save resources (Unesco New Papers on Higher Education 1998). The Canadian system was more focused on getting performance indicators and management information. Benchmarking was the driving force behind the Canadian Association of University Business Officers (CAUBO), which together with external consultants tried, in pilot phases of the project, to identify the best practices in the area of remuneration, purchasing and postal services. It also resulted in a website with a database of benchmarks and good practices. Benchmarking has also established cooperation among partners from USA and Australia and has been conducted on the level of individual universities, as well.

In the UK, benchmarking was initiated by The Engineering Professor's Council, whose aim was an attempt to develop a common framework of quality control of institutes through collaborative exploration and joint evaluation. The primary objective was the development and improvement of curricula, management and approval of curricula, student support and human-resource management (Závada

et al. 2006). Another project was a project of the British Quality Assurance Agency for Universities (QAA). The agency has the competence to design and disclose standards for comparing disciplines and professional fields. Within this agency, several small teams were to collect information on the applied standards in qualification frameworks. The latest benchmarking projects are under the moderation of HESA (Higher Education Statistics Agency) and are associated with the Universities UK Efficiency and Modernisation Project. These activities were completed in 2012, running the database HESA Benchmarking InfoKit.

The beginning of the Australian experience is directly linked to the US NACUBO Benchmarking project, which offered Australian universities access to databases, proprietary methodology assessment and counseling. The response to this collaboration from the Australian side was not completely positive. The main criticism was that the data from the database did not match the specifics of Australia; there was also a problem with currency conversions and ultimately the large amount of time consumed localizing the project. That was the cause of the project's failure. From the experience of this application, we can envision a requirement that benchmarking be performed by people who know the university from the inside. In 1995 the Commonwealth University Management Benchmarking Club appeared, whose aim was to support the achievement of excellence in the management of universities. The club is focused on the following issues: "Identify and promote best used practices, exchange ideas and promote the growth of awareness of possible alternative approaches in order to benefit from an international base of experience and innovation, learn from others, examine and continuously improve ways of benchmarking" (Závada et al. 2006, 10). The complete methodology for this project has been captured in, e.g., McKinnon et al. (2000). This project gradually began also to engage foreign universities. According to the audit report of the Australian University Quality Agency (AUQA), around 37 Australian universities have adopted this methodology (Stella and Woodhouse 2007). The true state of the use of benchmarking was audited by AUQA in several cycles. The latest 2007 report welcomes the great progress that has occurred in this area and on the other hand criticizes the unsystematic approach, the low efficiency, the low degree of internationalization, the low quality of data as well as the efforts of universities to prove primarily that they are "good enough" (Stella and Woodhouse 2007). An example of good practice is set by the example of the benchmarking of the research activities of the University of Adelaide, by the benchmarking process of teaching, learning and research by the University of Deaking and many others.

Among the European projects, we can include the benchmarking which took place at the University of Kaiserslautern in the framework of a doctoral thesis, the content of which was to analyze the long duration of doctoral studies. In the first phase, the key factors which could affect the increasing duration of doctoral studies were identified. These factors were compared with seven other German universities, making it possible to identify the differences as well as the causes of the prolonged

Table 2
Overview of benchmarking project and their main characteristics

Title	Methodology EFIN	Set of criteria for comprehensive quality assessment	Methodology ESMU	Benchmarking: A manual for Australian Universities	Nacubo indicators	HESA indicators	Ranking of faculties of universities in Slovakia (agency ARRA)
Localization	Czech Republic – National Level	Czech Republic – National Level	International – Europe	Australia – National Level	USA – National Level	England – National Level	Slovakia – National level
Focus	Partial – administration and management	Holistic	Holistic	Holistic	Partial – administration and management	Holistic	Holistic
Areas	Control and management, finance, property, ICT, human resources	The key results of the organization, employees, customers, surroundings	They are determined based on the self-assessment of the organization's strategic objectives, and improvements are focused on inputs, processes, results and outcomes	Management and administration, external impact, finance and infra-structure, educa-tion and training, student support, research, library information ser-vices, interna-tionalization, key results	accounting and finance, sports programs, functioning of foundations, maintenance and facilities management, fundraising, human-resource management, risk management, budgeting, student support and scholarship programs, organizational effectiveness	Strategic planning and management, student services, research, teaching, building management, finance, human resources, libraries and IT	Education, attractiveness of studies, science and research, doctoral studies, grant success

	A comprehensive methodology, examples of good practice, the definition of indicators, links	A comprehensive methodology for defining the indicators and their evaluation, Design of indicators	A comprehensive methodology, literature review, the indicators are not precisely defined, the process of selection and use of indicators is described	A comprehensive methodology, including definition of indicators	Methodology, publishing sets of indicators	Methodology, guidance on the preparation of indicators, publishing sets of indicators	Methodology of compilation of indicators, report with results of the evaluation report with graphs and development trends
Level of Documentation							
Interconnection with other models of performance management	Process Management, lean management, Balanced Scorecard	CAF	Process Management, Balanced Scorecard	Balanced Scorecard	CAF	Process Management, CAF	performance indicators

Source: authors

studies. The result of this project were changes made in the concept of doctoral studies, which led to a shortening of their duration (Závada et al. 2006). In Germany, a benchmarking initiative, the Higher Education Information System, was also created and was mainly focused on process control and management (European Centre for Strategic Management of Universities 2008b). Another project was the Leipzig Group, which included the participation of four universities and lasted for four years. The benchmarking focused on 19 indicators of teaching, research and international cooperation. Yet another example of good practice can be seen in the benchmarking project which began in Italy in 1999 and included the participation of 36 universities. The benchmarking was focused on management, and its overall goal was to increase efficiency. A structured comparison was carried out in the areas of student services, human-resource management, research support, logistics, but also in accounting.

Originally a one-time activity, it has become permanent, and involvement in this project is being considered by Spanish universities (European Centre for Strategic Management of Universities 2010). In Northern Europe, Arthus University initiated several benchmarking projects, to which it invited the universities of Kiel, Gothenburg, Bergen and Turku. The project lasted for three years and focused on the management of science, research and also on the management of the master's and doctoral programs (European Centre for Strategic Management of Universities 2010). Other national experience at the European level can be seen in the Polish initiative, which began in 2007. In the beginning, there was the Polish Rectors Foundation. By that time only pseudo-benchmarking or other informal benchmarking activities had been realized and were not institutionalized (Nazarko et al. 2009). The aim of the project was to establish a benchmarking system suitable for Polish universities. The initial project focused on two processes, namely e-learning and verifying the quality of teaching. The target group were agencies whose competence was to verify the quality of teaching and the involvement of the university, university employees and students.

An example of a pan-European project is the European Centre for Strategic Management of Universities (ESMU) project, which began in 1999 and has had 26 participating universities so far. The program covers the following topics: quality management, marketing, higher education, innovative teaching, management in a competitive environment, e-learning, planning, etc. "Unlike previous benchmarking initiatives, the European project of the Centre for Strategic Management of Universities focuses on efficiency and institutional processes rather than narrowly focused features such as faculties, institutes, departments and unions. It also allows participants of the program, who are registered representatives of universities, to learn from one another, regardless of national boundaries." (Závada et al. 2006, 15). The initiative IDEA League (Leading European Education and Research Science and Technology) was also a pan-European project which was holistically focused on

the process of teaching, research and internalization. The project lasted three years and had five participating universities.

In 2005, in the Czech Republic, a pilot program of introductory seminars was carried out in collaboration with the European Centre for Strategic Management of Universities, which was attended by three universities. In 2010, the project Benchmarking Program Information and Library Studies – Best ISK also began. The most recent activity in the Czech Republic to focus on enhancing the quality of higher education as well as being an integral part of the benchmarking process is the project Quality, Relevance, Efficiency, Diversification and Openness of Higher Education by 2030.

Table 2 summarizes main features of most important benchmarking projects, discussed above.

3. Mapping existing experience and opinions concerning the benchmarking in the Czech higher-education system: with a focus on economic and management studies

To obtain the information about the Czech situation and to answer our research questions, we used a questionnaire survey focused on the description of the current experiences of university management of the subjects with regard to benchmarking. Secondary targets included identifying the types of benchmarking used, the strengths and weaknesses of benchmarking and the barriers to the implementation of benchmarking. The questionnaire survey was conducted through an electronic questionnaire. A link to the electronic questionnaire was sent to individual respondents, along with a cover letter by email. The questionnaire contained 24 questions.

The groups of respondents were identified based on the first phase of a structured interview with Nadine Burquel, who was the main author of the research on collaborative benchmarking at the European Centre of Strategic Management of Universities. The selection of the target groups was confirmed by the literature review, since most articles referred to the fact that the guarantor of the benchmarking project at each university was usually a member of the senior management of the university/faculty, i.e. the person holding the position of rector/vice-rector or dean.

We have focused solely on economic and management faculties at public and private universities in the Czech Republic. The survey lasted a month and contacted the academic officials at 22 economic faculties from public universities and 21 from private universities. A total population of 146 academics were interviewed, 41 of whom completed the questionnaire.

3.1 Research results

In this section we summarize the responses to our research questions. Concerning the level of development of benchmarking in Czech higher education, the responses indicate that some benchmarking initiatives are realized, but systemic collaborative benchmarking attempts are fully absent in the university environment in the Czech Republic. Preliminary questions also focused on the perception of benchmarking in academic administration, where we found that 62.5 % of respondents consider benchmarking a continuous process that, in cooperation with each other, allows them to exchange information in order to improve their own processes and mutual learning. The remaining 37.5 % perceived benchmarking as an internal tool for making comparisons with the competition. For these respondents, the definition of benchmarking did not contain any emphasis on continuity nor on their own process improvement. One additional question asked which other tools increase quality according to respondents' workplace experience. Most respondents cited the certification norms ISO (30.56 %) and Management by Objectives.

Consequently, we have focused on identifying the types of benchmarking with which the respondents have experience, and the questionnaire showed that 85 % of respondents have experience with competitive benchmarking, followed by internal benchmarking, where experience was confirmed by 80 % of the respondents. 35 % had experience with collaborative benchmarking, and the lowest level of contact was seen with the implicit benchmarking, which had been implemented in the workplace by 25 % of respondents. Overall, the dominant focus with benchmarking has been on outputs and outcomes, and on teaching and research. 75 % of respondents said that for benchmarking they had used quantitative indicators. Conversely, very little attention was paid by the respondents to the overall management of the university.

An important range of questions has identified the major benefits, negatives and implementation barriers to benchmarking. In questions relating to the benefits and negatives of implementation barriers of benchmarking, we investigated the levels of agreement with the present statement. All respondents noted that the need to identify their own position was a benefit of benchmarking. 90 % of respondents agree that the improvement of processes as well as increases in efficiency are benefits of benchmarking, 80 % of respondents consider the establishment of goals to be a benefit of benchmarking. Conversely, the least amount, a mere 22.5 % of subjects, considered cost-savings to be a benefit of benchmarking; 40 % of respondents considered the opportunity to cooperate with other entities to be a benefit of benchmarking. In questions identifying the negatives of benchmarking, 70 % of respondents said that it was time-consuming, 55 % of respondents cited the need to collect large amounts of data as being a disadvantage, with the same proportion of respondents regarding benchmarking on the whole as being a burden for the entire organization. In the next question the respondents identified barriers to the

implementation of benchmarking at their workplace. Most respondents (75 %) said that the necessity to pursue other activities, such as teaching, research and administration was a barrier to implementation, 73 % of respondents listed the problem of obtaining relevant data, and 57 % of respondents agreed with the statement that the lack of methodology and standardized procedures presents a barrier. On a positive note, we can state that the fewest respondents identified a distrust of management (20 %) or a lack of funds (37.5 %) as barriers to implementation. When we focused on the actual implementation of benchmarking and competitive benchmarking, 62 % of respondents said that the objective of benchmarking had not been precisely defined, and more than 2/3 of respondents were also unable to quantify the costs of benchmarking.

In the last part of the research we focused on an analysis of the potential of collaborative benchmarking. We discovered that regarding the demand of the respondents after the implementation of collaborative benchmarking, 42.5 % expressed interest in the implementation of collaborative benchmarking in their own workplace, but a large group of respondents chose the answer "I do not know." Respondents' interest in collaborative benchmarking increases when the Ministry of Education, Youth and Sports pays part of the cost to stakeholders, with 57.5 % of respondents being willing participants, 37.5 % remaining undecided and 5 % refusing to participate in benchmarking. In the next question, we focused on identifying a suitable moderator for collaborative benchmarking. On this question, we again examined the degree of agreement to the submitted variations. The highest support from the respondents (35 %) was obtained for the variant which stated that it should be established by the participating universities or participating university itself, which was followed by the option where the Ministry of Education, Youth and Sports (32.5 %) acts as the moderator. The least support was received by the options which have private businesses as moderators (25 % of respondents).

The survey results revealed some inconsistencies in the answers of the respondents. The respondents perceive benchmarking as a tool based on cooperation, but in fact competitive benchmarking is what is predominantly utilized. The possibility of a comparison with the competition is seen as the main benefit, whereas improving processes and performance is second. They attach minimal importance to cooperation with other partners. Other results concerning the benefits and negatives of benchmarking are in agreement with the results of the SWOT analysis presented in an earlier section.

4. Proposed model for benchmarking

General information and our data indicate that collaborative benchmarking is not yet systematically realized in the Czech higher-education environment, despite the fact that public universities cover more than 90 % of their costs from public resourc-

es (Ministry of Education, Youth and Sports 2015). We feel that this is an important gap due to the above-mentioned large potential benefits of BM for all stakeholders. To respond to this gap, in the following part we propose the targeted model, how to do it for faculties of economics and management, and we also discuss possibilities of its implementation.

4.1 Benchmarking model (maximalist approach)

The creation of the model is based on a simple philosophy – on the fact that Czech economic and management programs have agreed on list of strategic priorities. This list was created with the support and within the KREDO project and is valid till 2020. The strategic priorities defined and agreed by this project are also the base for the benchmarking model – each priority represents one benchmarking area for our model, and within all priorities we propose relevant indicators. With this the concept of the model is as follows:

Priority 1: The quality of studies, study results, alumni, students, educational outcomes (27 indicators)

Priority 2: The applicability of graduates in the labor market, changing the profile of graduates, coherence with practice (10 indicators)

Priority 3: Innovation of study programs (in cooperation with the business community, permeability fields, accreditation, expansion) (12 indicators)

Priority 4: Financing (studies, school activities, stable financing, financing of contracts, sources of financing, external influences on financing) (16 indicators)

Priority 5: Cooperation with other objects within the third role of universities (27 indicators)

Priority 6: Support of science and research, development of research disciplines (15 indicators)

Priority 7: Infrastructure, material-technical and information support of the university (16 indicators)

Priority 8: Human resources development (academic and support staff, structural change) (13 indicators)

Priority 9: Internationalization of all activities (15 indicators)

Priority 10: Communications (internal and external, marketing.) (9 indicators)

A full list of indicators for each priority is provided in Annex 1.

The following chart represents the proportion of indicators for each priority in the total number of indicators:

Chart 1

The proportion of indicators for each priority in the total number of indicators
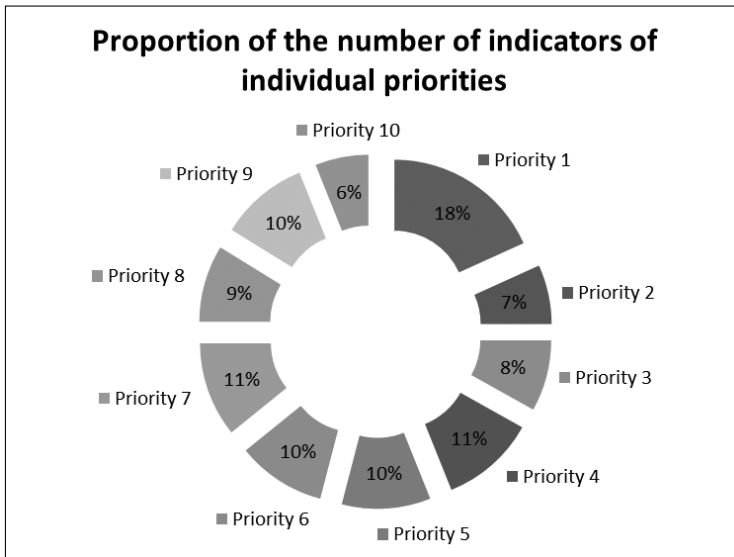
Source: Authors

4.2 Discussing the feasibility of the proposed model

In the first phase we created a model with 148 indicators. Because it is fully obvious that such a model might be too complex and quite complicated to fill with data and operationalize for use, in the following text we discuss its feasibility and applicability in two steps. First we test the model in terms of the difficulty to fulfil the model of the required data. Second we test it by direct interviews with representatives of economics and the management of higher education in the country.

Concerning the first level, we checked already existing data sources that may serve as the source of information – the overview of the existing databases and their classification according to availability is provided by Table 3.

This check shows that out of 148 indicators that were defined, approximately 37 (25 %) indicators can be compiled from existing public data. According to the experience that the authors derived from interviews, an extra 20 (13.6 %) indicators defined in the model are internal data which are routinely collected, a significant portion of which is information obtained from managerial accounting. Regarding other indicators, we can assume some increased spending by schools on surveys reporting the required data.

Table 3
Overview of potential data sources for the model

Public data	Internal data
Information on the website of the schools (about accredited programs, staffing etc.)	School's accounting
Annual report on school activities (there is a recommended range of information – basic information about the school, accredited courses, number of students in individual fields and forms of studies, graduates, academics, social issues of students, research and creative activity, quality-assessment methods)	Personnel Database of the School
The annual economic report (balance sheet, income statement, financing of scientific and creative activity)	Records of the study department
Facebook	Internal School Information System (ERP)
Index of information on results	Results of surveys conducted by school
Database of the former Institute for Information on Education	Data from Alumni Association
Ministry of Education website	
Database Web of Science, Scopus	
Reflex study results and other investigations	

Source: Author

In the second stage, we conducted structured interviews with four chosen academics who are members of the management of public and private faculties/universities of economics and management; two of them had previous experience with benchmarking while working as the head of a benchmarking project. They confirmed the accuracy of the approach regarding the definition of the model and its methodology. However, at the same time, respondents pointed to the high range of indicators and the large amount of data that will be necessary to compile. They also clearly indicated that concerning the implementation of collaborative benchmarking in higher education in the Czech Republic, the process (being fully comprehensive) cannot be initiated everywhere at once.

Both inputs clearly indicate the need to adapt our original maximalist model into a more real one. To reflect this need, we propose a multi-stage model for benchmarking based on the classification of the indicators in terms of the difficulty in obtaining the necessary data. Based on this classification, we have created a four-tier model, which is structured as follows: 1) key indicators of the model on output 2) the basic variant, 3) medium variant models, 4) the maximum version of the model.

1) Key indicators of the model on output – it is a set of twenty speed indicators on output, which are used to rank schools against the competition. Indicators can

also be used for potential students. The indicators of priorities are as follows: Number of hours taught by teachers with the rank of associate professor or professor/number of taught hours; average mark for the final exam; number of unfinished studies/number of students; average length of studies in various stages of studies; number of unemployed graduates two years after graduation/number of graduates; average starting salary in their first job; average salary of graduates five years after graduation; number of students who receive a job offer from a partner of the school already during studies/total number of students; number of bachelor's and master's theses focused on practical applications/number of topics; number of lifelong-learning courses; number of awards from third parties; number of positive references from employers; number of students in Ph.D. programs; number of researchers with a PhD, associate professor and professor rank/number of academics; number of points in the RIV (Index of information on results) for the researcher; citations per researcher in WOS and Scopus; number of joint degree programs (double degree) accredited with a foreign partner; accredited programs/courses taught in a foreign language/number of programs; number of students with foreign mobility/total number of students; average length of foreign mobility for students.

2) The basic variant of the model – this option of the benchmarking model is based on indicators that can be obtained from public sources or from school information systems, without the need to transform the data, possibly by the need to incur additional expenditure for the acquisition of data. The indicators describing the priority of the quality of studies, study results, alumni, students, learning outcomes (9 indicators), employability of graduates in the labor market, changing the profile of the graduate and coherence with the practice (2 indicators), financing (1 indicator), innovation in study programs (3 indicators), cooperation with other objects within the third role of universities (6 indicators), Support of VaVal, development of research disciplines (2 indicators), Human Resources Development (1 indicator), internationalization of activities (6 indicators) and communication (3 indicators) are all factors which have a large impact on this model. Future students, in addition to management and academic staff are the potential users.

3) The medium variant of the model – this alternative model is characterized by higher demands for data gathering, and data is no longer freely available and must be transformed or converted into ratios in this scenario, so we can expect additional costs for data acquisition. This variant of the model is intended more for management because it obtains information from the school information system and managerial accounting; this option describes the following priorities: quality of studies, study results, alumni, students, learning outcomes (9 indicators), employability of graduates in the labor market, graduates profile, consistency with practice (3 indicators) innovation of study programs (5 indicators), finance (10 indicators) cooperation with other objects within the third role

of universities (6 respondents) support of VaVal, development of research disciplines (8 indicators) infrastructure, material-technical and information support of the university (7 indicators), human-resource development (8 indicators), internationalization of operations (6 indicators), communications (2 indicators).

4) The full version of the model – this is the total benchmarking model, which includes all of the defined indicators along with the additional cost of obtaining the necessary data.

The multistage approach allows schools to determine the level of economic involvement in the organization of benchmarking. This approach eliminates the major barriers to the implementation of benchmarking identified on the basis of the SWOT analysis and the questionnaire survey.

5. Conclusion

The article is based on primary and secondary research and summarizes the current experience with benchmarking in higher education not only in the Czech Republic, but also in the world. Using a questionnaire survey, it maps the existing experience and opinions concerning benchmarking in the Czech higher-education system with a focus on economic and management studies. The main result of the article is the proposal of a collaborative benchmarking project, the potential of which remains untapped in the Czech environment, including the individual indicators. The model is made on the basis of a synthesis of current theory and previously used benchmarking models. The model is then evaluated using a structured interview with academics who have practical experience with benchmarking.

Based on this evaluation, we propose a multistage model, which allows schools to determine the level of economic involvement of the organization into benchmarking and thus lead to the elimination of the main barriers to the implementation of benchmarking which were identified based on the SWOT analysis and the questionnaire survey. The practical implementation of this model would lead to the achievement of an even higher level of potential for this tool in higher education.

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Annex no. 1: maximalist model

The quality of studies, study results, alumni, student outcomes – Annual increase resources in the library; number of computers in classrooms/number of students; number of computers in the studies/number of students; speed and scope of the Internet connection; average length of studies in individual stages of studies; outcome evaluation of schools by the accreditation commission; international ranking; average grade for the final state exam; number of applications submitted to the studies; number of accepted applicants/number of applications; number of students enrolled/number of applications; number of courses accredited in foreign language/number of branches; number of students/teachers; number of elective subjects/total number of objects; number of unfinished studies in the first year/number of students in the first grade; number of resources in the library; number of unfinished studies/number of students; number of hours taught by teachers with the rank of associate professor or professor/number of taught hours; average mark at the final examination; number of unfinished trials/number of students; average length of studies in various stages of studies.

Employability of graduates in the labor market, changing the profile of the graduate and coherence with practice – Number of bachelor's, master's and doctoral dissertations dealt with as an assignment from a partner school; number of unemployed graduates two years after graduation/number of graduates; number of students who receive a job offer from partner schools already during studies/total number of students; number of partners from the application sphere; number of degree courses accredited in cooperation with a partner from the application/total number of branches; number of partners from the application sphere; number of degree courses accredited in cooperation with a partner from the application/total number of branches; number of unemployed graduates two years after graduation/number of graduates; average starting salary in their first job; average salary of graduates five years after graduation

Innovation of study programs (in collaboration with the business community, permeability of disciplines, accreditation, expansion) – Volume of funds from foreign sources received by the school in the innovative fields of studies; average preparation time of the study program for accreditation; number of courses completed at the request of third parties; number of positive references by employers; successfully accredited courses/number of applications for accreditation; number of lifelong-learning courses; number of awards from third parties; number of innovated study programs per year; number of bachelor's and master's theses focused on practical application/number of topics.

Financing (studies, school activities, stable financing contract financing, sources of financing, external influences on financing) – Share of public resources in

total revenues; diversity income (measured as shares of individual categories of income); volume of obtained grant funding/total revenues; costs to the student; debt depreciation and amortization of property (the share of foreign resources/total liabilities); increase in assets; operating profit; profit secondary activity; total profit; average tuition fees.

Cooperation with other objects within the third role of universities – Volume of funds allocated for activities related to the development of the region; volume of funds dedicated to community activities; share of college graduates in the total number of graduates in the region; number of educational activities (e.g. retraining courses) completed for the benefit of the region; number of member schools and school staff in the institutions of regional stakeholders; number of successes of students and staff outside of the main activities related to the region; number of regional partners; universities; number of opportunities for physically disabled students; number of opportunities for physically disabled employees; number of events organized for the public by the school; number of joint projects implemented with regional stakeholders and outside the core business; number of workplaces established based on the requirements of the region.

Support for VaVal, development of research disciplines – Number of researchers/number of academics; number of researchers with PhDs.; rank of associate professor and professor/number of academics; number of projects implemented with foreign partners; number of researchers from abroad/number of researchers; number of completed internships at foreign scientific work at the workplace; number of points in RIV; number of points in RIV for the researcher; number of students in Ph.D. programs/total number of students; number of students in Ph.D. programs; number of researchers with a PhD, associate professor and professor rank/number of academics; citations per researcher in WOS and Scopus.

Infrastructure, material and technical and information support of the university – Cost per m^2; cleaning price per m^2; energy costs/operating costs; number of users per employee for operation of ICT; printing costs/operating costs; costs for maintenance and repairs of the property/volume operating costs; number of printers per employee.

Human-resource development (academic and support staff, structure change) – Number of academic staff per support personnel; payroll costs for each category of employee; share of professors and associate professors in the total number of academic staff; age structure of employees; wage bill/total expenditure; volume of wages for employee motivation/volume of wages; number of non-financial benefits; median salaries of academic staff/median wages of university-educated workers in the private and public sectors; number of employee complaints.

Internationalization of activities – size of the budget for projects in internationalization; expenditures for internationalization/total expenditures; level of language skills of students; average length of international mobility for students; average length of international mobility for the academic staff; payments to foreign students/total revenues; courses taught in a foreign language/number of disciplines; proportion of students with international mobility/total number of students; academic staff who have already finished mobility/total number of academics; foreign students/number of students abroad; academics/total number of academic staff; number of joint study programs (double degree) with a foreign partner; accredited fields in a foreign language/number of fields; proportion of students with foreign mobility/total number of students; average length of foreign mobility for students.

Communications (internal and external, marketing) – volume of funds allocated to internal and external communication/total expenditure; number of marketing and PR staff; number of press releases, newsletters and communiqués; website traffic; visits on Facebook and Youtube; number of followers on Twitter.