



## Competitiveness Review

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Marija Stonkiene Renata Matkeviciene Erika Vaiginiene

### Article information:

To cite this document:

Marija Stonkiene Renata Matkeviciene Erika Vaiginiene , (2016), "Evaluation of the national higher education system's competitiveness", *Competitiveness Review*, Vol. 26 Iss 2 pp. 116 - 131

Permanent link to this document:

<http://dx.doi.org/10.1108/CR-06-2015-0055>

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# Evaluation of the national higher education system's competitiveness

## Theoretical model

Marija Stonkiene and Renata Matkeviciene

*Faculty of Communication, Vilnius University, Vilnius, Lithuania, and*

Erika Vaiginiene

*Research Institute for Changes, Vilnius, Lithuania*

### Abstract

**Purpose** – The purpose of this paper is to present a model for the analysis of the competitiveness of the higher education system based on the application of M. E. Porter's diamond model for researching the competitiveness of the national higher education system.

**Design/methodology/approach** – For the research that is presented in the paper, several methods of theoretical research were used: induction, deduction and comparison.

**Findings** – Application of the selected model provided factors for assessment of the performance of higher education institutions and their performance, as well as the ability of higher education institutions to monitor the environment and, depending on the changes in the environment, to introduce internal changes.

**Originality/value** – The paper proposes a model for examining of the factors of competitiveness in the higher education system.

**Keywords** Competitiveness, Higher education system, Porter's diamond model

**Paper type** Conceptual paper

### Introduction

Researchers involved in the analysis of the development of higher education systems draw attention to the fact that globalisation, the increasingly growing costs for the public sector (including higher education) and the actualisation of knowledge economy are introducing changes in the performance of higher education sectors, perception and evaluation, operating conditions, functions and mission of the institutions of higher education, resulting changes in the national higher education systems, alterations in the national higher education policies and new strategic goals set for the sector (Burbules and Torres, 2000; Mok and Welch, 2003).

Under the influence of the changing social conditions, the majority of the world's national higher education systems have undergone changes that resulted in altered objectives of the participants of this sector, i.e. to increase the competitiveness of these systems, to ensure a special status of higher education institutions in the national systems and the world and to increase their capacity to attract sources alternative to state funding (Deem *et al.*, 2008, pp. 83-84). Demeulemeester (2011, p. 2) notes that the change in the national higher education systems is characterised by certain common features: reductions in state funding, introduction of a new ratio of education funding



provided by students and state resources, introduction of new public management, increase in internationalisation and others.

The scholars note that the application of neo-liberal ideology is primarily attributable to the changes in higher education funding (Ferlie *et al.*, 2008; Deem *et al.*, 2007; Schimank, 2005). Jessop *et al.* (2008) argue that the market-based neo-liberalism involves the promotion of entrepreneurship in the higher education sector, the application of new strategic paradigms promoting the attraction of investments in higher education development and, as a result of these developments, the changes in management of the higher education system. The analysis of the competitiveness of higher education phenomenon reveals that scientific works do not present the concept of higher education competitiveness, which may be related to the fact that there is no scientific consensus with regard to the unified concept of competitiveness.

To reach a consensus on the concept of competitiveness may be complicated due to the fact that competitiveness can be seen at different levels: macro (at national level), meso (at the level of economic branch or economic sector) and micro (at enterprise level). Apart from that, competitiveness can be examined at a range of levels, i.e. internal (national), local (regional) and international (global). Dominating multi-aspect definition of the field shows that the competitiveness of higher education, its research and evaluation suggest new complex (interdisciplinary or even multidisciplinary) themes in the field of higher education research.

The objective of this article is to present a model of the analysis of the competitiveness of the national higher education system. The objective aims discuss the peculiarities of higher education in defining the concept of competitiveness in the higher education system and analyse and introduce M. E. Porter's diamond model adapted to carry out the research of the competitiveness of the national higher education system.

#### *Peculiarities of higher education system, forming a unique concept of higher education competitiveness*

Traditionally, higher education in Europe has been part of the state-led social policy, ensured by public funding (Fägerlind and Strömqvist, 2004). The conception of higher education as a field of public responsibility has been developing under the influence of a concept of higher education as part of public well-being, based on both the classical university tradition of free education and the interference of the state in arranging and providing higher education.

The emergence of globalisation and the rise of a knowledge-based society had a major impact on the systemic and institutional changes in higher education systems (Mok and Welch, 2003), especially in growing market tradition in higher education (Shin and Harman, 2009). In summary, the studies of the impact of globalisation on higher education carried out by various scholars have identified the following crucial change of directions in higher education triggered by globalisation:

- massification of higher education;
- change in higher education management (privatisation included);
- change in responsibility and accountability for the quality of higher education;
- internationalisation of education; and
- ranking of higher education institutions (Shin and Harman, 2009, p. 3).

Scholarly insights account for the emergence of pre-conditions for the global competition as well as conditions for its development or a continuously emerging trend of global competition in higher education. Marginson (2004, p. 176) notes that an open information environment and the development of networked relationships that strengthen international flows do not indicate the existence of an international education system, the local context is important for the interactions between universities or activities of knowledge-based clusters. Marginson argues that the local context leads to a new corporate autonomy of a number of universities from the illiberal state institutions (Marginson, 2004, p. 176). The importance of the national context is attributed to national resources and national needs. To define these intertwined contexts of higher education as well as the impact of their elements on the higher education sector, Marginson and Rhoadeshave (2002) introduced a new term – *glonacal* (*glonacal* = *global* + *local* + *national*). This approach allows to identify the peculiarities of global competitiveness in higher education: creating of opportunities and conditions for institutions of higher education to compete on a global scale increases their competitive potential on the local and national scale; enhancing of the global competitiveness of higher education institutions can be ensured by national resources; global competitiveness can be affected by the activities of higher education institutions at the national level. The suggestibility of the higher education system to the global, local and national contexts indicates the potential sources for raising competitive advantage initiatives that emphasise the specificity of competitive conditions provided for the higher education system and indicate the potential peculiarities characteristic to the evaluation of the competitiveness of the higher education system that requires distinctive approaches to measure competitiveness.

Market ideology applied in higher education and being promoted by globalisation is based on the economic neo-liberalism doctrine that ascribes the significance to market power and deregulation, and seeks reduction of public expenditure on higher education as well as on other social services and the input of new higher education funding sources. Neo-liberalism in higher education is primarily associated with the idea of academic capitalism, where any institution or professional attempts under the market conditions or *market-like* conditions to raise funds alternative to public funding from the budget (Slaughter and Leslie, 1997). The idea of academic capitalism is based not only on commercialisation of scientific knowledge in the market (patenting, licensing or establishing *spin-off enterprises*, etc.) or *market-like* conditions (obtaining funding by grants, establishing various partnerships of higher schools and business organisations, raising funds from tuition fees, etc.), but also includes other activities of higher education institutions that are changing the interaction between higher schools and their social environment. Market relations in higher education are characterised not only by the idea of academic capitalism but also by the concepts of new public management and entrepreneurial universities (Deem, 2001).

The researchers, while highlighting the advantages of the input of market relations in higher education, note that the application of the neo-liberal ideology is primarily associated with positive changes in higher education funding (Ferlie *et al.*, 2008; Deem *et al.*, 2007; Schimank, 2005): the change in the activities of higher education institutions, the development of their entrepreneurship, the promotion of competition among higher education institutions and higher education systems (higher education institutions, being the participants of the higher education system, compete to attract academic

resources, commercialise scientific knowledge and for academic services). Another advantage of market ideology is that the market assigns resources to research on a competitive basis, which leads to the usability of scientific knowledge and research, i.e. specific potential commercial benefits.

However, in addition to the advantages of market relations in higher education, possible negative consequences of the input of market relations are visible: the limitation of access to scientific knowledge due to commercialisation, the restriction on innovation diffusion, potential threats to academic freedom, the underestimation of fundamental research, the training of specialists of narrow specialisation and the advent of specialised research. Subsequently, the shrinkage of higher education as a public good, accompanied by declining public support, is identified as a negative impact.

This means that, seeking to meet the public interests of the university, the cost-benefit paradigm should not deny the distinctive approach to higher education as a public good, but ensure the fulfilment of satisfying the public interests delegated to higher education institutions and include other public expectations traditionally attributed to higher education as the area of public responsibility (e.g. fundamental research should be considered as the public good, to ensure a broad dissemination of the findings of scientific research, the establishment of higher education institutions, the diversity, applicability of higher education outcomes, the availability of higher education, etc.).

The experts of the World Bank note that even though higher education and other public sector institutions compete with each other for the state budget funding, the financing of higher education from these resources remains important for three reasons:

- (1) the investment in higher education provides benefits in terms of economic and social development;
- (2) the market disadvantages largely influence inaccessible loans to part of the students; and
- (3) higher education is important for the development of basic and secondary education ([Constructing Knowledge Societies, 2002, p. 76](#)).

Taking into account these peculiarities of higher education as that of an area of specific activity, while dealing with the concept of higher education competitiveness, it is appropriate to evaluate the aspect of the competitiveness of higher education as a whole of long-term economic and social welfare growth conditions. The involvement of the higher education system in the process of increasing the state (public) welfare requires the input of not only the needs of the market, but also of the social state (society needs) aspect into the concept of the competitiveness in higher education. So, it is assumed that higher education competitiveness is related not only to economic factors as a whole, but also with the development of the context – the environment of the political, social and other capacity of higher education. Therefore, it is argued that neo-liberalistic access based on the change of operating conditions of higher education institutions forms a distinctive (specific) concept of higher education competitiveness. In view of the fact that the input of market relations, above all, is observed in the realisation of the teaching function in higher education institutions (in case of insufficient state funding, higher education is funded by household resources or interested business organisations, corporate funds), commercialisation of this function of higher education institutions

compared to the other, i.e. research function, requires relatively smaller investments. Scientific review when on competition in the higher education sector draws a lot of attention to the aspects of “competing for students” (especially for students from other countries).

Competition in the presence of market relations in the field of study of higher education is associated with the student attraction leading to the attraction of financial resources. This suggests that higher education institutions when competing for financial resources, the source of which is the students (especially from other countries; in terms of the competitiveness aspect, it can be seen as a “foreign trade in higher education services”), acknowledge the significance of the reputation of a higher education institution as that of a provider of higher education, in particular, a comparative assessment of a higher education institution as a higher education provider (rankings of higher education institutions provide information that enables to appropriately compare or evaluate). Market relations in higher education shape the attitude towards students as recipients of educational services, namely, as consumers. This approach is based on the fact that students are exposed to higher education expenses and should be treated as any other service users. [Maringe \(2006\)](#) draws attention to the fact that students are not regular customers (or rather users). The researchers draw attention to the fact that education services are regarded as distinctive services, as the provision of these services involves essential relationship with the recipient; otherwise, higher education services are referred to as “people-based” services ([Mazzarol, 1998](#); [Kusumawati et al., 2010](#)). Students as consumers are distinctive due to the fact that students are active participants in the process of higher education (learning); the student ability and effort influence the quality of the competencies they have acquired; therefore, the measurement of student satisfaction as that of a typical consumer by limiting students to the role of a passive recipient of the service, rather than an active participant of the process of service provision and consumption, does not reveal the peculiarities of the sector of higher education.

[Maringe](#) draws attention to the fact that the researchers assert that the approach to students as users of an educational service poses threat to the comprehension of the study process. If students are considered to be users of the process of education (beneficiaries of the study process), they are sort of relieved of the study process (are no longer major participants in the study process) ([Maringe, 2011](#)). There are scientists who claim that students are not exposed to all expenditure on higher education, and they do not “purchase” qualifications, and, therefore, cannot be considered as users ([Emery et al., 2001](#); [Eagle and Brennan, 2007](#)); other scholars see a broader circle of service users in higher education – students are considered to be primary users, employers or secondary users of higher education services ([Nicolescu, 2009](#)). Apart from that, higher education is considered to be a unique “commodity” because it is difficult for a “consumer of higher education” to effectively assess the quality of higher education for the following reasons: lack of experience of the purchase of this commodity (the student has neither any experience of the selection of his/her personal study programme, nor that of its change) and he can assess the quality of higher education when he starts studying or begins his working career.

These peculiarities of higher education determine the state obligation to ensure the protection of higher education consumers’ rights while this obligation is realised in licensing, accreditation of higher education institutions and the provision of information on quality of service provided by higher education institutions ([Smith, 2000](#)). Thus, in



the market of higher education, the commodities and services are purchased not by their end-user, but the public agent on behalf of the end-user (Cave and Kogan, 1990, p. 183).

The examined peculiarities of higher education define the specifics of the concept of higher education, including higher education sector, competitiveness. Kemnitz draws attention to the fact that the scientific literature shows little interest in the investigation of competition of the higher education sector (Kemnitz, 2004). Scientific research carried out on the issues of higher education competitiveness focuses on different aspects of competitiveness of the higher education sector – educational service market problems (Adelman, 2000; Marchese, 2000), the impact of demographic factors on higher education (Altbach *et al.*, 2009; Swailes, 2002; Keller, 2001), tuition fees (Geiger, 2004; Hughes, 2011; Ehrenberg, 2002), changes in higher education funding (DelRey and Racionero, 2010; Curs and Singell, 2010; Johnstone, 2004) or changing priorities of the state, international organisations, assigned to the relevant fields of scientific work.

Scholarly attention is low in discussing the concept of higher education competitiveness, as there is no detailed evaluation of the competitiveness of the higher education system, sector or institution, or factors forming a competitive edge. Having evaluated the operational peculiarities of the higher education sector, the fact that the evaluation of the state performance as that of the competitive entity involves a relevant component of public interest satisfaction, it is believed that the construction of the concept of competitiveness of the higher education system should include the know-how of modern definitions of the states' competitiveness.

Therefore, it is appropriate to comprehend the competitiveness of the national higher education system as the capacity of the higher education system to create, maintain and develop the higher education environment in which the higher education system can compete not only nationally, but also globally as well as increase the welfare level of the society, the public. This concept is based on the establishment and assurance of the operating environment of the higher education system, i.e. providing the conditions for competitive operation of the higher education system. The interaction of the national higher education system and the state competitiveness enables to evaluate the application of the state competitiveness research models to explore the competitiveness of the national system of higher education.

Yu-Heru and Chung-Hsing (2001) draw attention to the association of the concept of competitiveness with the context and suggest analysing the competitive environment when measuring competitiveness. The researchers recommend to analyse the five dimensions of cost, productivity, quality of service, price and management. These scholars believe that the analysis of the cost should examine the range of flexibility the financial institutions are allowed by the country's legal framework; productivity measurement is proposed to include the evaluation and comparison of the input and the output obtained; the measurement of the quality of service should involve surveys; the analysis of price competitiveness should be based on the assessment of the flexibility to set prices. It is recommended to analyse the conditions set by the legal framework, enabling a flexible response to dynamic changes in the competitive environment. Attention is drawn to the fact that management is a key factor for change, having a major impact on efficiency; therefore, the management performance can be assessed in terms of profitability and market share (Yu-Heru and Chung-Hsing, 2001).

Cost analysis of all dimensions highlighted by Yu-Heru and Chung-Hsing is given special focus in the analysis of the competitive environment in which the system of

higher education (higher education sector) is operating. This dimension must be examined by evaluating the financial flexibility volumes provided for higher education institutions, which mean that the opportunities to attract financial resources alternative to budget public funding must be considered, i.e. the market (*quasi-market*) conditions must be determined. This conclusion is based on the fact that market relations in higher education are considered to be an essential condition in evaluating the competitiveness of the higher education system, the higher education sector. The dimension of productivity measurement in higher education also has a peculiar expression, as the productivity measurement is affected by the peculiarities of both the input – contribution of the higher education system, the higher education sector – and the outcomes.

It is believed that the measurement of productivity in the higher education system is substituted by the measurement of effectiveness and efficiency (public administration rather than the economy approach). The significance attributed to the service quality dimension by Yu-Heru and Chung-Hsing in evaluating the competitiveness of higher education, higher education sector, indicates the relevance of the assessment of quality of service of higher education. Another important indicator in higher education is the dimension of management, which is characterised by the fact that higher education has traditionally been a public responsibility such that the objectives set for the higher education sector involve the satisfaction of the public interest. This means that for the analysis of the competitiveness of the higher education system, the higher education sector there should be evaluated for peculiarities in higher education management. The observed peculiarities are evaluated by the proposed M. E. Porter's diamond model adaptation.

*M. Porter's diamond model adapted to evaluate the competitiveness of the higher education system*

*M. Porter's diamond model* is one of the most widely applied instruments for the evaluation of the competitiveness designed primarily to assess the national competitiveness, later adapted to evaluate the competitiveness of economic sectors (Porter, 1990). It is noted that most common models of the competitiveness are based on Porter's diamond model. The model evaluates internal and external factors that create advantages in the global market.

Analysis of the possibilities of application of Porter's diamond model for investigation of the competitiveness of various sectors demonstrates universality of the model based on the selection of important factors for evaluation of the expected competitiveness. The factors are internal factors, demand conditions (customers and their needs) and service-related industries, allowing to concentrate activities and gain competitive advantage through operations' strategy and structure, as well as based on country's legal conditions and cultural specificity, could be used to assess competitiveness in the higher education sector. The literature review has shown that the diamond model was applied for investigation of specific elements of higher education system by Hazelkorn: Porter's model adapted by P.J. Carrant was used for investigation of changes in the system of higher education related with research in academic research competitiveness (Hazelkorn, 2005). Vitásková and Jukl (2005), in accordance with the provision that innovative potential of higher education is related with research activities of higher education institutions, have used the model presented by Hazelkorn and



adapted it for the analysis of competitiveness of innovation potential of Czech high schools. Adaptation and usage of the Porter's diamond model for the analysis of scientific research competitiveness draws attention to the unique role of state government both for the formation of competitive scientific research environment, and influencing parameters of competition, noting the importance of higher education system's flexibility and assurance of requirements of responsibility and accountability.

Despite the critics of the model's high level of abstraction and the ambiguity of the manifestation of proposed relations, that Porter shifts in explaining the competitive advantage or competitiveness at variety of conceptual scales: state, industry, individual firm in regional and national levels, but does not take independent variables into account (Eickelpasch *et al.*, 2011), and does not describe in detail the relations between each determinant (Ozgen, 2011), Porter's diamond model is still one of the universal models that are applied for the analysis of the competitiveness.

This model evaluates the internal and external factors that create advantages in the context of a global market: internal factors such as demand conditions (consumers and their specific needs), industrial sectors as well as the strategy, structure and competitiveness of the entity (depending on the country's legal conditions and the country's cultural peculiarities), and important external factors are considered to be the state institutions (the government) and opportunities.

While evaluating the feasibility of M. Porter's *diamond model* in examining the competitiveness of the national higher education system, it is necessary to take into account the peculiarities of the national higher education system. Given the peculiarities of the outcomes of the performance (mission) of the higher education system, consider competitiveness of the higher education system (higher education sector, higher education institutions) as the ability of the system of higher education (higher education sector, higher education institutions) to create, maintain and develop the higher education environment in which the higher education sector is not only able to compete, but also raise public and state welfare. The analysis of the national higher education system's competitiveness should assess both the competitive conditions ensuring the capacity of the higher education system and the higher education system's ability to respond to the goals related to satisfying the public interests, set by the society and state, as well as to increase the level of the public and state welfare.

The capacity of the higher education system is associated with the comprehension of higher education as a public good, the perception of the public good factor, with the benefits received from higher education outcomes by the society and the state. It should be noted that the evaluation of the outcomes obtained from the higher education system is closely related to the implementation of the so-called third university mission.

Considering the fact that the higher education system's operational outcomes are significant to both the public and the state. It should be noted that the development of conditions facilitating the growth of competitive capacity of the system of higher education, first of all, depends on the state policy and the performance of state institutions. The role of the state institutions is associated with the elimination of information asymmetry shortcomings that are characteristic to the market (or *quasi-market*) of higher education, so the assessment of the competitiveness of the higher education system (higher education sector) must include the discussion of state activities in the field (the accreditation of higher education institutions, the assessment

of the quality of the performance, the external evaluation of all activities and actions directed to satisfy the public interest). Apart from the fact of the higher education sector's ability to generate financial resources as significant in terms of the diversification of income sources, raising funding sources alternative to state budget funds, it is also important to point out the investigation of the conditions that ensure the competitive edge of a national higher education system, the conditions offered to higher education institutions must be evaluated first, as well as the given opportunities to compete for funding alternative to state budgetary financing (both for higher education and research).

The application of a mixed approach, based on resources and competencies, is considered to be the most appropriate in examining the conditions that boost the competitiveness of the national higher education system.

The application of the approach requires to evaluate appropriate competencies and the quality of the performance relevant to both carrying out the missions of higher education and managing the system of higher education, the higher education system's ability to create and maintain diversity in the system of higher education (in terms of its institutions, courses, etc.). It should be noted that the status and prestige of the system of higher education (higher education institutions) is related to assessment of the quality of competencies of the higher education system and performance of appropriate activities. Attention is drawn to the fact that the assessment of the competitiveness of higher education highlights the competition among higher education institutions providing educational services, whereas the competition of institutions carrying out scientific activities (research) is not based on the assessment of institutions, and is only visible in the competition with regard to the financing of activities.

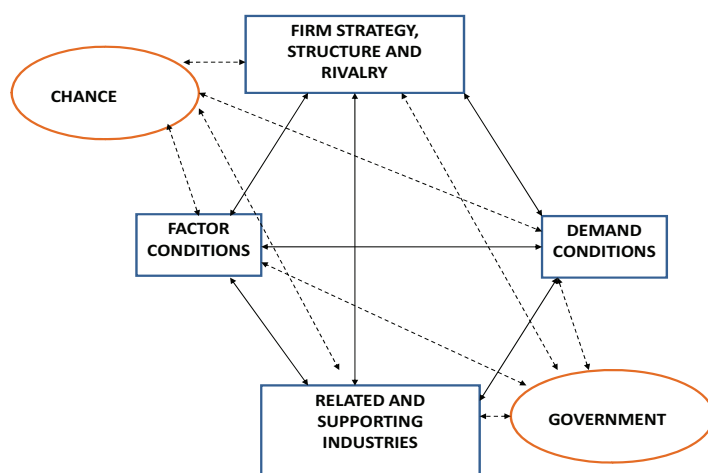
The highlighted aspects in the assessment of the competitiveness of the higher education system (sector) require the adaptation of M. E. Porter's *diamond model* that is based on the belief that it will be possible to apply it in researching both the entire system and the higher education as an economic sector; however, it is considered that to assess the competitiveness, the presence of the market (or *quasi-market*) is the condition necessary in both cases.

The adapted M. E. Porter's *diamond model* (Figure 1) shows that the development of the national higher education system (sector) is considered to be an integral part of a complex network that includes a variety of public life sectors of the national state that play an equally important role in increasing the state's economic competitiveness and implementing other significant efforts to create a welfare state.

In this model, one of the external factors, i.e. *the government institutions (the government)*, is seen as a partner whose role in the system is essential: the national system of higher education depends on the decisions made by the government institutions. The impact made by the governmental institutions is associated with other sectoral policies influencing the development of the higher education system. Another external factor – *the opportunities* – is conceived in the model in their traditional meaning, as unexpected events affecting the change of a competitive ability or a competitive situation. Ozgen (2011) argues that opportunity recognition is a multidimensional process in nature and information is central in this process.

The internal factors of the national higher education system (sector), as the model suggests, are considered to be *the internal factors* that play a decisive role in operational activities of the higher education system (sector):

- *Factors of production* of the higher education system (sector) that are perceived as the resources and competencies (*the input*) necessary to carry out the higher education system's (sector's) functions (defined by distinguishing the traditional university missions, i.e. teaching and research). Resources and competencies can be identified as the resources and competencies of the teaching and research quality or the resources and competencies of the status of the national higher education system. These resources comprise both the country's basic factors (geographic location, demographics, etc.) and general factors (developed general economic infrastructure as well as the infrastructure of higher education system, intellectual capital, etc.) and specialisation factors (skilled human resources, crucial for their specific skills, advanced research, study methods and techniques, innovation, etc.); important evaluating aspects of the resources are those of resource development, renewal as well as the speed of use and efficiency. A distinctive resource of the higher education system is those seeking for higher education, their "quality" directly related to the operational quality of the higher education system and the evaluation of the outcomes received from this system. Therefore, the "factors of production" include the higher education system's international cooperation, participation in research networks, arrangement of international education, attraction of foreign students for study, attraction of foreign scientists and professors to participate in the study process of the national higher education institutions.
- This model presents *the conditions for the demand* of the outcomes of the higher education system's (sector's) performance in terms of the applicability (marketability) of the learning (study) outcomes and research findings of the higher education system; this internal factor can be defined as the output of the third university mission: the applicability of the outcomes of the higher education systems is associated not only with meeting the market needs, but with satisfying the public interest, so the evaluation of the outcomes of the higher education system's performance should take into account the fact that only part of these outcomes can be evaluated by economic categories or quantitative indicators. In analysing this internal factor, it is important



**Figure 1.**  
M. E. Porter's  
diamond model  
adapted to examine  
the competitiveness  
of the national higher  
education system  
(sector) (developed  
by the authors using  
M.E. Porter's  
*diamond model*)

to consider the fact that the adaptability and marketability of the higher education system (sector) depend on the qualities of the users of the performance outcomes of the system (sector). The needs and expectations of the users of the performance outcomes of the higher education system (sector) not only create the demand for the performance outcomes of the higher education system (sector), but also form the requirements for the quality of these outcomes. It is necessary to consider the fact that the peculiarities of higher education define the opportunities for the application of the outcomes of the higher education system (sector) in the local, national and global (*glonacal*) market.

- Two other internal factors: the higher education system's (sector's) management, funding and structure, and the higher education system's (sector's) accountability, accreditation and assessment are closely inter-related, as they indicate the significance of the role of the state in the system of higher education and describe the importance of this role.

The assurance of the efficiency of the national higher education system is associated with the management, structure and financing of the higher education system (sector) (similar coverage limits are observed in the factor derived by Michael E. Porter's *diamond model*): the conditions governing the higher education system's (sector's) operating conditions as well as conditions for higher education institutions in terms of their establishment, management, performance and financing from the state budget funds indicate the volume and characteristics of the competition taking place between the participants operating within the system (sector) of higher education. It should be noted that the efficiency of the establishment of higher education institutions, their operational arrangement and management depend both on the legal conditions provided for the system of higher education and the cultural and economic peculiarities of the state.

Competitively favourable legal environment tends to be emphasised as significant in providing diversity of higher education institutions, high-quality study programmes and innovation of teaching methods, as well as maintaining the organisational flexibility to meet new and increasingly growing needs of society. Such a system of higher education operating environment, formed by means of management of the system of higher education, is supplied with financial resources, seeks to balance its costs and expenses and is characterised by high strategic and operational management capabilities.

Other internal factor that is considered to be accountable for satisfying the public interest of the national higher education system, in accordance to Michael E. Porter's *diamond model*, is shown as a factor comprising the service and related industrial sectors. The relevance of the accountability of the higher education system (sector) is associated with the accountability of the higher education system (sector) as that of the entity operating in the sphere of satisfying public interests. The accreditation and evaluation are related to the duty of the state to ensure the rights of higher education consumers. Altogether, this internal factor can be described as that of a public agent institution (Cave and Kogan, 1990, p. 183).

Adapted *diamond model* by Michael E. Porter to examine the competitiveness of the national higher education system (sector) is intended to explore the environment in which higher education systems (sectors) not only compete but also seek to improve the welfare level of the society.

## Discussion and conclusions

The analysis of the scientific approach to factors determining competitiveness reveals that a variety of concepts of competitiveness correlate with diverse theoretical sources available on evaluation of competitiveness. As it was stated in the paper on the internal and external economic factors, economic characteristics are considered to be most significant and they indicate the assessment methods and indicators for the analysis of the sector.

Changes in the system of higher education related with application of new public management are directed to the input of market relations and form the basis for operation of the system of higher education on an equally important basis: market and social responsibility. Market ideology based on neo-liberal economic doctrine applied in the higher education system raises the importance of market, deregulation, reduction of public expenditures and search for alternative sources for funding higher education. As it was stated in the article, neo-liberal doctrine in the sphere of higher education is related with the concept of academic capitalism and operation in market-like conditions, and highlights the commercialisation of scientific knowledge, competition for the grants and funds, i.e. because of the market-like conditions, there are changes in the management of higher education institutions – rise of entrepreneurial universities. The implementation of neo-liberalism doctrine in the system of higher education impacts changes not only in the system as such, but in institutions that operate in the system, and as well on other actors that are related with the institutions operating in the system of higher education. As it was stated in the article, changes based on market-like conditions that occur in the system of higher education cause some negative consequences as well, and they are related mostly with the social dimension (limitation of access to scientific knowledge, narrowing specialisations, restrictions in innovation diffusion, etc.). Therefore, the new approach in the context of market-like conditions that are prevailing raises the importance of investigation and evaluation of competitiveness factors of higher education system.

Undoubtedly, the analysis of the competitiveness of the higher education sector like that of any other sector of the economy involves such significant factors as the general macro-economic factors revealing the context of the higher education system, the analysis of which is relevant in forecasting the performance of the higher education sector. When applying the approaches that examine the competitiveness of the economic sector proposed by the scientists (e.g. K. R. Tefertiller and R. W. Ward, K. Drescher and O. Maurer, E. Pitts and M. Lagnevik, D. Kim and B. W. Marion) to investigate the competitiveness of the higher education system, the peculiarity of higher education, i.e. meeting the public objectives and public interests, as have been already discussed, should be evaluated. It is believed that the traditional economic sector approach related to the pursuit of economic benefits, applied for the competitive assessment of the higher education sector, is hampered by the features of the higher education sector.

The analysis presented in the paper shows that competitiveness in the higher education sector could be analysed by using a methodology for analysis of competitiveness in the public sector: the competitiveness of the national higher education system could be analysed through the capacity of the higher education system to create, maintain and develop the higher education environment in which the higher education system can compete not only nationally, but also globally, with the aim to increase the welfare level of the society in which the institution of higher education (or higher education sector) operates. This concept is based on the establishment and assurance of the conditions for competitive operation of the higher education system.

The application of the adapted Porter' diamond model (with appropriate exceptions) to measure the advantages of system performance indicators is possible only in evaluating the national competitiveness of the entities of the higher education sector (higher education institutions). Globally, the method applied to measure the advantages of the performance indicators in the higher education sector is hindered by the peculiarities of the national higher education systems and differences in higher education sectors of the states. It is believed that the assessment of the competitiveness in the higher education sector should apply the approach that evaluates the competitive advantage of the existing system with its legal, political, economic, social and other factors. The appropriateness of this approach is based on the development of a higher education environment that encourages, enables and ensures a competitive higher education system that will take an active part in increasing the standard of public (society) welfare and satisfying the public interests.

When considering the applicability of approaches used to evaluate competitiveness in the economic sector for the assessment of the competitiveness in higher education, attention is drawn to the significance in evaluating the market of higher education. The analysis of the competitiveness of the higher education sector like that of any other sector of the economy involves such significant factors as the general macro-economic factors revealing the context of the higher education system, the analysis of which is relevant in forecasting the performance of the higher education sector. The application of measuring methods to evaluate the advantages of the performance indicators in the higher education sector is hindered by the peculiarities that occur when the higher education sector is carrying out the function of satisfying the public interest, as this sector is traditionally assigned to the area of public responsibility.

The article proposes a model for examining the higher education system (including higher education institutions) that assigns significance to the assessment opportunities of higher education as that of a system: the assessment of the performance of higher education institutions and factors that determine their performance (human, financial, material and other resources, management, leadership, etc.), the ability of higher education institutions to monitor the environment (performance of other higher education institutions, the system of higher education, the performance of other public sector institutions, interpretation of policy/decisions made by the state institutions) and, depending on the changes in the environment, to introduce internal changes (the ability to compete on services, human resources, etc.).

The analysis of the components of the competitive model adapted to the higher education system highlights the component of human resources (researchers, higher education administrators, lecturers, students, etc.): the overall competitiveness evaluation system is based on the human competencies, ensuring the performance of higher education institutions, its assessment, potential demand or final outcomes. One more aspect is worth mentioning – the assurance of public welfare: the competitiveness of the higher education system does not determine profit of any particular organisation, but targets at developing knowledge as a basis for the creation of new knowledge and development of exclusive competencies, i.e. the sustainability of the system is ensured on the basis of the circulating knowledge within the system, resulting in the creation of added value to society and the state.

The issues of competitiveness in the analysis of the higher education system (especially of the institutions) are associated with both global and local context,



emphasis is laid on the benefit gained from the development of competitive environment resulting in changes introduced not only in individual sectors of the economy, but also in the state. The application of this scientific approach to the assessment of the competitiveness in the higher education system signifies the relevance of evaluating both the local and global contexts. The higher education sector's competitiveness is unique due to the exceptional role of the state (government): state's (government's) role may be crucial in determining the structure and operating principles of the overall higher education system. The analysis of a scientific model targeted at the evaluation of the applicability of higher education research activities for the competitiveness evaluation revealed that the financial and international cooperation aspects are observed as the most significant aspects in assessing competitiveness in this area of higher education. These important aspects are also evaluated by the proposed adaptation of M. E. Porter's *diamond model*.

A high-quality higher education system which involves active participation of the public at large is a mandatory requirement to ensure the state's development and international competitiveness.

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### Corresponding author

Marija Stonkiene can be contacted at: [martastonke@gmail.com](mailto:martastonke@gmail.com)

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