INNOVATION COMPETITIVENESS OF UNIVERSITIES – HOW TO MEASURE IT?

Chief Assist. Prof. Dr. Zornitsa Yordanova
University of National and World Economy, Bulgaria

ABSTRACT

The paper presents a methodology for measuring innovation competitiveness of universities stepping on the applied educational innovations within all university functions. The purpose of presenting the methodology is its possible repetitive application in many other than the currently undertaken research for achieving better validation of the necessary steps for measuring Innovation competitiveness of universities. An assumption in the study is that a university may implement, develop and educate innovations only after its ability to manage and implement them into its own organization. A second assumption is that implementing educational innovation in all university functions is the only way to improve university education. Since educational innovations are a highly dynamic and developing field, also dependent from many factors as cultural, political, financial, human and even religious aspects, the currently presented methodology describes how the process of measuring innovation competitiveness of universities may be achieved for a specific scope. The process of measuring innovation competitiveness of universities goes through all stages from first defining the attributes of educational innovation types involved, exploring rankings for university competitiveness and realization of a survey across the scoped for researching universities.

Keywords: *university management, innovation, innovation management, educational innovation, university competitiveness*

INTRODUCTION

Innovation is located within the core of the European Union's efforts to make the Union the most dynamic and competitive economy in the world and to ensure high quality of life for European citizens. It tries to do this by focusing on the development of research, education and, all forms of innovation. The Lisbon Strategy, which has grown into a Community 2020 Strategy, is again focused on innovation and is based on three main priorities: the first among which is reasonable growth, i.e. developing a knowledge-based economy and innovation. Innovation has been one of the most discussed and hot topics for the latest 20 years, and despite its widespread and topicality, integration within all industries and recognition of innovation significance, researches on them still do not still bring the desired results and indicative values set by the EU to the member countries. The reasons for this are many, varying and even inconclusive. But some of the answers lie in the highly applicable nature of innovation, the extremely high dynamics of the environment, and the coalescence of innovation with human nature and its desire for continual change and improvement. These factors outline the complexity of innovation and place their interdisciplinary character in the focus when choosing an approach to their research. All these allegations require asking a major issue in innovation science. The question is whether their research and study would lead to better results or their real use and optimization of their management would actually help to achieve the necessary innovation level. The EU expects to boost the economy's innovation by investing directly in the economy rather than making efforts to root innovation in the future economy and intellectual power of the Union - young people, by using the education for this purpose. The existing model of stimulating innovativeness of the economy "treats" the object in its current state of illness through financial

injections instead of taking care of the causes and sources of problems by integrating foundations for its future high results. This is why educational innovations are extremely important for the subsequent innovative development of the economy and their integration into a pre-eminent position of the economy – universities, is crucial for achieving the Union's goals. However, innovation in universities is a huge, broad and difficult for researching topic.

This paper presents a methodology for measuring innovation competitiveness of universities.

PROBLEM STATEMENT

Analyzing the state of art in the field of educational innovations and their development, application and management in universities, major sources of information are mainly research on principles of innovation management; education as a means of achieving innovation and smart intelligence and growth; all policies, recommendations and strategies of the EU; and a huge number of case studies with educational innovations. But how actual application of educational innovation is linked to the competitiveness of universities and especially to universities' ability to develop, manage and educate innovations? There is a knowledge gap on the topic in this regard.

There are almost no researches on the introduction and management of educational innovations in universities and the impact of their implementation, including obstacles to such actions. There is a lot of researches on how education could help for boosting innovation in economy and scientific excellence, but researches on how innovation in education results in universities' competitiveness and in boosting innovation in the economy, and whether they are effective, are missing. It is not clear also what are these educational innovations and if they are aligned to global trends and good practices. There are too many case studies in the literature without proper research on their typology and structure [1].

Despite a large amount of scientific literature in the field of educational innovation, which confirms the relevance of the topic, no attempt has been made so far to compare the use of educational innovations and the achievement of university competitiveness, which proves the originality and innovative approach of the research.

Through the presented methodology in this paper, the author will further explore and demonstrate that innovation in education is a key factor in achieving universities' competitiveness and a key factor for improving the quality of education and university leadership. Education has a fundamental role in innovation development in the future economy. This gives education an extremely important central position in the formation and development of the personality, in particular higher education - for the development of all sciences and spheres of development of human generations as a whole. It is education that has the characteristics of an accelerator to achieve results by properly defining objectives and using appropriate tools. In this sense, the objectives are clear – developing and researching innovation for the purposes of economic growth, but still the instruments for boosting innovation remain ineffective. Given the function of education to set a pattern and to be a tool for achieving goals and development in every respect of human achievement, interests and needs, the lack of innovation or their inefficiency in its realization is unthinkable and illogical. Therefore, they should be researched and analyzed. In support of the fundamental nature of the study, it is necessary to create common principles and good practices to which universities aspire and a tool for assessing their efforts in this direction.

Till the moment, there is a lack of clarity, systematization, categorization and analysis of educational innovations and their management in universities, how they are used and what results they give, what are the obstacles to their effective use and application, what are the good practices that would be appropriate for implementing in university management. As there are separate sources of information on innovation in primary and secondary education, they are almost absent in the field of higher education. Analyzing the researches carried out recently, special attention should be paid to the report of the European Economic and Social Committee on the Modernization of Higher Education Systems in Europe from 28 March 2012 [2]. It draws conclusions on the basis of a comprehensive audit of existing educational problems and proposes the development of a strategic innovation policy for universities. According to Tsokov [3], innovation in education management is a process of creating or introducing innovations that affect, in whole or partially, the educational policy, its objectives, principles, strategies, functions, management structure, content of its governing bodies, technologies, management of resources and processes in the educational system aimed at increasing its quality. The objective of the present methodology is to make a comprehensive analysis of the management of innovation in universities, to study the application of educational innovations, their importance for achieving competitiveness of universities, the efficiency of their use, the competitive advantage of the universities using innovations and how universities and the Higher education is positioned in the context of European and world trends and best practices in the field. A number of researchers and leaders declare their conviction that the future of higher education depends on innovation and the project team believes in that.

CONCEPTUAL FRAMEWORK OF THE STUDY

The methodology presented in the paper aims at identifying and assessing the importance and dimensions of educational innovations developed and applied in universities and higher education as a major factor for enhancing their competitiveness. As a sub-goal, the methodology may also explore the link between the application of educational innovations and the state's innovation performance. The methodology may be used in the context of a country or in a scoped subject/type of universities. That is why, the current paper describes its process and logic for its future re-use and application.

Tasks to perform the methodology in a specific scope:

- Identification and categorization of educational innovations developed, applied and used in universities and higher education;
- Investigating the competitiveness of universities through indexes measuring competitiveness of universities;
- Investigation of the dependence between the educational innovations used in universities from the scope and their competitiveness (through the selected indexes) and an empirical research of the dependence on the use of educational innovations in universities and higher education and innovation performance of the country;
- Draw up recommendations and conclusions from the development, implementation and use of educational innovations to increase the competitiveness of universities and higher education;

Basic research hypothesis (H1):

Educational innovations developed and implemented in universities and higher education are a key factor in enhancing their competitiveness and fostering the future innovation of the economy.

Auxiliary research hypotheses:

- The development and implementation of educational innovations at universities promotes and supports research (H2);
- The development and implementation of educational innovations at universities promotes and supports teaching and learning (H3);
- The development and implementation of educational innovations at universities promotes and supports the administration and management of universities (H4);
- Developing and implementing educational innovations at universities enhances the efficiency of the student-university-business relationship (H5);
- Educational innovations are an essential element of the competitiveness of universities (H6);
- The right and effective management of educational innovation fosters their development (H7);
- The development and implementation of educational innovations has a positive impact on the innovation of the country's economy (H8);

Bearing in mind the stated above hypotheses, the methodology is built so as a research based on it to confirm and assess these statements for a particular scope of universities.

EDUCATIONAL INNOVATION LITERATURE ANALYSIS

Innovation is considered as the main driver for growth and a determinant for organizational and sectoral productivity, efficiency and competitiveness [4]. Many organizations have declared that improving and increasing innovativeness and the ability to develop innovations are amongst the most substantial factors for growth [5]; [6]. Innovations are equally important for the private and governmental sectors, important for humanity in general. Since it has been clarified that innovations are the most reliable tool for transforming the past and present up to a superior level, the issue how more effectively and successfully innovations should be managed is still valid. The issue is critical when it comes to education as this is the other recognized growth engine for humanity.

Educational innovations are defined by Taylor et al. [7] as any novel teaching technique, strategy, tool, or learning resource that could be used by an instructor to lead to effective (or promising) instructional techniques that benefit student learning and engagement. According to Fullan [8], educational innovation must contain three elements: use of new revised materials (curriculum materials or technologies); use of new teaching approaches (teaching strategies or activities); alteration of beliefs (pedagogical assumptions).

Much research has been done on the problems that education is facing. Utilizing the idea of problem-driven innovation, the current research aims at extracting some commonly identified problems and challenges because of the understanding that these would be the directions for education innovation in the future. According to OECD [9] the main issue in education and the starting point for innovation in the sector are productivity and efficiency. In education,

efficiency means the balance between resources invested and the outcomes in terms of students' performance and equity.

According to Kozma [10], educational innovation means supporting a shift from traditional paradigms towards emerging pedagogical approaches based on information and Communication technologies (ICT) solutions such as fostering learner-centred and constructivist processes, and the acquisition of lifelong learning skills. Hannon [11] refers innovation to a complete shift in the educational paradigm, driven by the four principles of social innovation, i.e. openness, collaboration, freedom, and direct participation of those involved. Innovation has become an essential ingredient in creating and sustaining a culture of performance in higher education and keeps transforming higher education [12].

Staley and Trinkle [13] formulated ten trends in managing higher education and respectively referring the educations innovation. These are: Increasing Differentiation of Higher Education; Transformation of the General Education Curriculum; Changing Faces of Faculty; Surge in Global Faculty and Student Mobility; The New "Invisible College"; The Changing "Traditional" Student; The Mounting Pressure to Demonstrate Value; The Revolution of "Middle-Skill" Jobs; College as a Private vs. Public Good; Lifelong Partnerships with Students.

Ebersole [14] has defined the following challenges which higher education leaders face: a trend toward competency-based education, tougher accreditation standards, an emphasis on assessment, voids in leadership, and the growing diversity of students as challenges that will plague higher education in the coming years. Wai [15] detected globalization and collaboration as big challenges, which the educational innovation should be, addresses as cross-disciplinary collaboration received increasing attention. Sustainability has also been identified as a crucial factor for as to encompass the different effects of human resources for sustainable development.

METHODOLOGY

The methodology, an object of the paper is presented in fig. 1 below. It shows the dependency and sequence of the necessary steps for assessing innovation competitiveness of scoped universities.

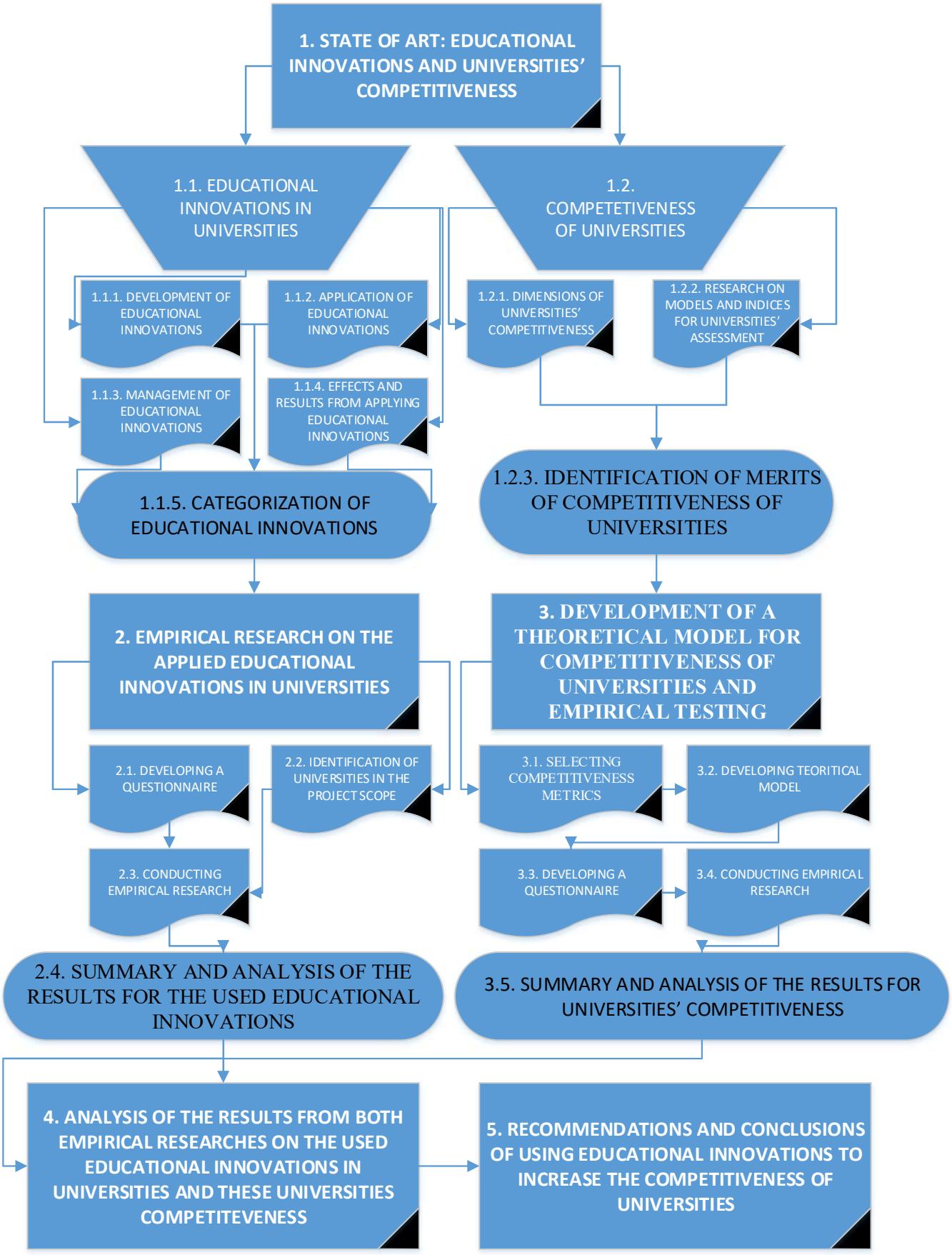

Figure 1. Methodology for repetitive measuring of innovation competitiveness of universities

As it is shown in the visual representation of the methodology for measuring innovation competitiveness of universities, the process starts with defining the objectives of educational innovation for the scoped universities, subjects or a country. The educational innovations may differ hugely based on the types of universities or the focus of the research. Selecting indexes for measuring competitiveness may also differ from a country to country or depend on the science filed (U-Multirank for instance). Having selected the scope of these two variables, leads to the next steps of the methodology proposed. Based on the scoped educational innovations and a selected university competitiveness index, then a questionnaire may be distributed to assess the level of the applied educational innovations.

CONCLUSION

The practical use of this paper is a possible application of the proposed methodology for measuring and assessing the innovation competitiveness of universities for further research projects. The methodology has been already applied by Bulgarian researchers scoping more than 25 universities from all around the world for first validation of the methodology. In this very first trial of this methodology application, educational innovations have been categorized into 19 types: new skills for development, related to the new world challenges; quality requirements; the increasing globalization in education and in all related fields; e-learning as a main trend; culture, incl. migration issues; collaboration, educational model changes; ICT development and its implementation in education for future generations; efficiency; motivation, incl. motivational issues for the new generations; the increasing complexity of education bearing in mind the globalization and digitalization of it; process innovation; accreditation equitation; new leadership requirements; achieving sustainability; creativity as a main core value for future students; faculty management and mobility as a means of extending options for students. U-Multirank has been selected as a ranking assessment variable. A detailed online questionnaire is available on request as well as the results and data from the already undertaken research.

ACKNOWLEDGEMENTS

Acknowledgments: The paper is supported by the BG NSF Grant M 15/4 -2017 and No KP-06-OPR01/3-2018.

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