

Competitiveness of higher education institutions and academic entrepreneurship

Competitividad en instituciones de educación superior y el emprendimiento académico

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ABSTRACT:

The growing competition in the global market of educational services poses a challenge for higher education institutions looking for the ways to increase their competitiveness, thus, stipulating the rationale of our research. The purpose of the article is to define components of higher education institutions competitiveness and academic entrepreneurship and find the conceptual link between the components. The research performed develops academic knowledge by extensive definitions analyses on higher education institutions competitiveness and academic entrepreneurship.

Keywords: National education system, higher education institution competitiveness, academic entrepreneurship, educational ranking

RESUMEN:

La creciente competencia en el mercado global de servicios educativos plantea un desafío para las instituciones de educación superior que buscan formas de aumentar su competitividad, por lo tanto, estipula el fundamento de nuestra investigación. El propósito del artículo es definir los componentes de la competitividad de las instituciones de educación superior y el emprendimiento académico y encontrar el vínculo conceptual entre los componentes. La investigación realizada desarrolla el conocimiento académico mediante amplios análisis de definiciones sobre la competitividad de las instituciones de educación superior y el emprendimiento académico.

Palabras clave sistema educativo nacional, competitividad de las instituciones de educación superior, iniciativa empresarial académica, clasificación educativa

1. Introduction

In the modern economy higher education institutions (hereafter, HEIs) are treated equally like any other companies across various industries, and economic efficiency is getting a primary task to be achieved. National governments do not reject to finance national

education systems due to another task (perhaps, of higher priority) to form human capital. It is of high importance for Russia and other countries considering human capital as a factor of production which contributes to country competitiveness.

The studies in the area of education systems competitiveness by different countries have shown that the main goal of increasing national education system competitiveness is to increase the competitiveness of the country (Štimac and Šimić, 2012; Porter et al., 2016; Ashour and Fatima, 2016; Chou and Chan, 2016; Svobodova, 2016; Kireeva et al., 2017; Zhu et al., 2017). The ways to achieve this goal are different. Countries improve their competitiveness through human capital development, attracting international students to their higher education institutions, through science development and stimulation of innovations, or combining all these factors.

The development of human capital leads not only to an increase in living standards but also to an increase in the economic efficiency, labor productivity, creating favorable conditions for investments. Attracting the flow of international students, national education systems not only internationalize society but also make countries and their economies more open for investments and especially for international graduates of national HEIs who are familiar with the culture of home and host country. From the economic point of view, the integration of science, education, and business is necessary for development in the context of the innovative economy (Zavyalov et al., 2017). The implementation of academic research results to practice, commercialization of innovations developed by academics or research institutes defined by many authors as academic entrepreneurship (Zhang, 2009; Sysoyeva, 2015; Belkin et al., 2016) depends to a large extent on the goal-setting of educational organizations, on the goals and competitiveness indicators they set in their development programs.

The article embraces literature review devoted to the issues of HEIs competitiveness and academic entrepreneurship, and provides data and research methodology description. The discussion part presents practical recommendations. In the end a conclusion is made on interrelation between HEIs competitiveness and academic entrepreneurship.

2. Literature review

It is essential to understand the notion of competitiveness in general and the notion of higher education institution competitiveness in particular. The concept of competitiveness widely used implies the ability or feature of an object to be better than others in its capacity, in an array of similar objects. Services, companies, industries, regions, employees can be deemed through a prism of competitiveness. In this case A.I. Kovalenko (2013) states that competitiveness of various objects has different meanings. In particular, the competitiveness of goods is treated as the ability to satisfy buyers' needs, the country's competitiveness presumes the ability to create and increase national product, to take a particular place in the international division of labor, and the competitiveness of an industry implies the ability to increase its share in the gross domestic product.

In other words, competitiveness means the ability of a company or industry to cope with competition. To be competitive is to occupy the dominant or growing positions on the market (internal and external).

The competitiveness of a company is defined as a level of competency with regard to other competitors by the following parameters: technology, staff knowledge, and skills, the level of strategic and operational planning, quality (of management systems, production, and products), communication. Taking into account all definitions mentioned above, the definition of HEIs' competitiveness is not sufficient and clear enough in Russian national science yet.

Educational services on the modern market as well as any other services are offered in a highly competitive environment. HEIs should understand their competitive advantage to conquer the market and gain a firm foothold, bearing in mind transnational corporations emerging as important players with significant resources to "perform their own large-scale educational programs and train specialist-practitioners of the highest level" (Tarakanov et

al., 2017). The market of educational services is a place of interaction between the demand for and supply of educational services provided by various educational and non-educational institutions.

Popescu (2017) articulates that “higher education institutions throughout the world are undergoing considerable functional and structural changes as they adapt to meet the needs of a global and knowledge-based economy. There is an urgent call for them to be equipped with a well-defined and implanted globalization strategy to tap and provide useful and simple planning tools to utilize global resources effectively”.

Lombardi and coauthors (2017) investigated “the new role that universities are assuming as entrepreneurial entities supporting the development of regional innovation systems through an international comparison, to address the demand for global competitiveness”. Minola, Donina and Meoli (2016) also emphasize the critical role of universities as the main participants of economic systems in building an entrepreneurial society which is possible if the universities themselves become entrepreneurial.

Lashman (2010) points out that educational institutions should be amalgamated into clusters like industries. The government sees the following goals for the creation of clusters: to revive and strengthen the country's competitiveness, to spur economic growth, to create and preserve jobs, to confront risks of outsourcing, to promote the creation of material goods with high added value and skilled jobs.

Clusters could be either organized around HEIs or HEIs could be included in clusters. Regardless of the cluster form creation, the HEI and business community start interacting closely. If the idea of creating clusters is not considered, then the interaction of HEIs with business is getting increasingly close, i.e., educational standards stipulate for more training hours, state attestation and examination commissions incorporate business representatives. Therefore, education is getting more practice-oriented, and the link between education and business is becoming closer than ever.

Having studied academic entrepreneurship, the authors reveal it has existed for more than half a century. Khegay et al. (2017) indicates that academic entrepreneurship was originated in the second half of the 1950s. The founders of academic entrepreneurship are the USA. At the same time, this type of activity was not encouraged in the beginning. It was believed that academic entrepreneurship distracted academics from the main activity - education. However, due to the reduction in public funding for education in the mid-1970s, this type of activity began to be viewed in the academic community as one of the ways to generate income and attract students. Khegay et al. point out that by the end of the 1990s approximately 20% of the academics from the most successful countries regarding competitiveness (the UK, Germany, the USA, Japan, and Sweden) had experience in academic entrepreneurship.

In most cases, academic entrepreneurship is defined as an entrepreneurial activity of the university targeted at the commercialization of scientific results. However, there are also broader definitions of academic entrepreneurship (Table 1).

Table 1
Definitions of the “academic entrepreneurship”

Definition	Source
The main way of economic development and improvement of the competitiveness of a country and a region	Nabi et al. (2010), Zhang (2009)
Creative destruction applied to entrepreneurial activity in the university environment, which is based on management decisions and assumes a balance of centralization and decentralization, standardization and flexible programs, mechanical and organic organizational structures	Jones (2009)
An intellectual enterprise in which universities are built into the regional market to	Beckman et al., (2007)

create new "values" (including products) or promote new ideas that can benefit society	
Multiple activities, which include three components: 1) entrepreneurial activity related to education; 2) entrepreneurial activity related to scientific research; 3) entrepreneurial activity related to establishment of commercial enterprises	De Silva (2015)
The means of knowledge commercialization, expressed in the transformation of knowledge into new products, technologies and, ultimately, in the contribution to the economic growth of a country (regions) and innovation	Sysoeva (2015)

Various approaches to the definition of the term "academic entrepreneurship" were considered in the papers of Khegay, Belkin, Babak, Filatkina and other researchers.

Some Russian academics consider this term as not well-defined. Academic entrepreneurship in the Russian economic literature is often treated as completely different types of activities.

Belkin et al. (2016) express an opinion that this term is also used for activities that are not part of the daily duties of an academic, in particular, for tutoring, providing consulting services, conducting training and seminars for the business community, participating in joint projects. The authors of this study think such approach is more likely to characterize an academic-entrepreneur who possesses the entrepreneurial ability. In this study, the authors adhere to the traditional approach of the notion "academic entrepreneurship".

3. Materials and methods

The research was conducted applying the method of analysis for defining the notion "higher education institution competitiveness" and identifying targets of national education systems. The authors used an expert analysis of competitiveness indicators being a part of international rankings, accreditation systems, development programs of Russian higher education institutions as well as various publications on the HEIs' integration to use their competitive advantages for the innovative development of industries and regions. The analysis of world university rankings, analysis of information on the websites of university rankings leaders, facilitated further study of the academic entrepreneurship institute and identification of its main components. The scientific method of generalization revealed common features of the research objects and their relationship. The method applied was described by Kosso (2011).

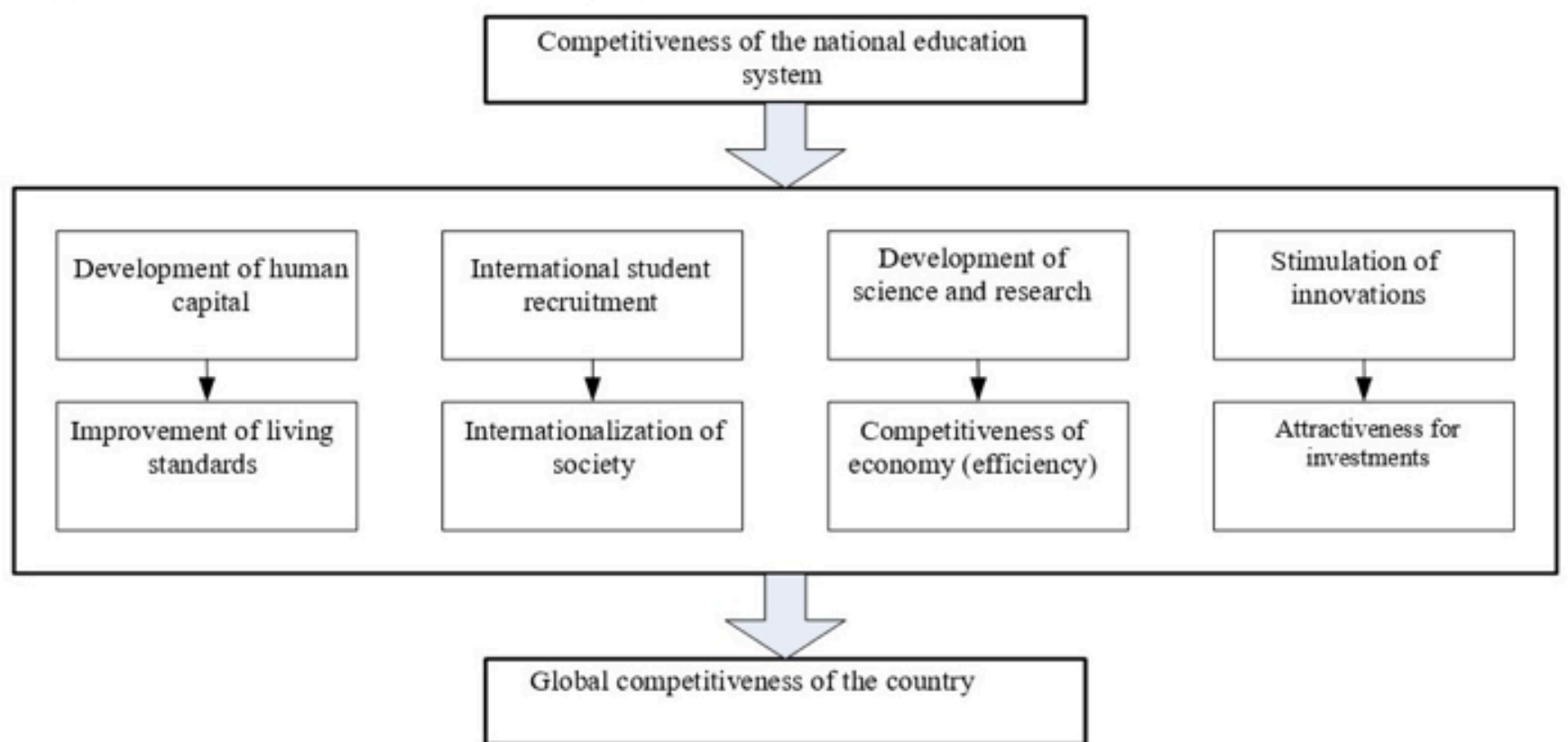
The familiar methodology of the research could be found in the work done by Cheng, Ko and Lee (2016).

4. Results

The country's global competitiveness is supported by national education systems competitiveness to a great extent. Figure 1 shows a bundle of competitiveness elements interrelated with each other.

Figure 1

Competitiveness of the national education system as a factor of global competitiveness of the country



The authors reviewed the academic literature related to the theme of the current research and competitiveness indicators included into development programs of Russian HEIs. It was found that the main components of the HEIs' competitiveness (mostly represented by universities) are educational programs demanded by consumers, graduates in demand, developed infrastructure and a strategic vision of the development.

Along with it, presence in international educational rankings is an important indicator of the HEI's competitiveness which reflects the level of the national education system. The most well-known rankings include the Shanghai Ranking (ARWU-500), the QS World University Rankings (QS WUR), the Times Higher Education World University Rankings (THE WUR).

Based on the rankings analysis, the authors conclude that the indicators of the HEI's competitiveness include the following:

- students to academic staff ratio,
- citations per academic staff member,
- international academic staff and international students ratio,
- returns from innovations,
- the total return of the university per student or teacher.

One could find Russian HEIs in the international rankings, but they do not hold leading positions. Among the Russian universities, Moscow State University, St. Petersburg State University and Novosibirsk National Research University have the highest ranks.

Saginova (2017) highlights, however, that "national systems for assessing the effectiveness of educational organizations should not copy the indicators of international rankings, but take into account specific goals and tasks of national higher education by the national development strategy".

In turn, the high positions in the rankings indicate the high level of competitiveness. However, to sustain leader positions, permanent development is crucial (the element of competitiveness called "strategic vision"). The development strategies of three top universities listed in QS WUR 2018 were analyzed. There are Massachusetts Institute of Technology (MIT), Stanford University and Harvard University, all based in the USA and private ones.

The elements of MIT development could be traced in the Fact Book including mission, organizational structure, educational programs, research activities, university infrastructure, financial results, and sustainability. Probably, the very next step for the university to increase competitiveness would be its maintenance and sustainable development, which could be considered as a goal of increasing university's competitiveness. MIT's sustainability

embraces many components such as subsidies for parking and public transportation, activities on sustainable development standards, participation in climate change events, construction and renovation on campus according to national quality standards, promotion of the sustainable development philosophy among students, staff, and partners.

Stanford particularly highlights the accreditation of the university in the Western Association of Schools and Colleges, recognized by the US Department of Education (Accrediting Commission for Senior Colleges and Universities, 2017). The Accrediting Commission assesses Stanford by four standards defining institutional purposes with ensuring educational objectives, achieving them, ensuring quality and sustainability, and commitment to the above. The Centre for Sustainable Development and Global Competitiveness, a part of Stanford, believes that "future economic and business development and competition will be conducted in the context of increasing environmental concerns and limited natural and human resources. Building competitive advantage in a global economy will require addressing the needs of smart business development and innovation in a rapidly changing business ecosystem while fulfilling social and environmental responsibilities and building a long-lasting foundation for sustainable development" (The Center for Sustainable Development, 2010).

The Institute for Strategy and Competitiveness at Harvard University considers competitiveness as the only way to achieve sustainable growth of employment, to improve remuneration, to increase living standards, but at the same time, the real value of competitive advantage is not fully researched (Competitiveness and Economic Development, 2017). M. Porter, Director of the Institute, defines productivity as the basis of competitiveness, which, in turn, takes into account the macroeconomic foundations of the competitive advantage that supports the productivity of the country, regions, and clusters. Porter argues that a clear economic strategy involving all stakeholders, contributing to the growth of innovation and, ultimately, improving productivity, is extremely important in times of economic crisis. Harvard University annually publishes a financial report, in which it is possible to review the actual implementation of the university development strategy.

Having analyzed the state of rankings' leaders, the authors come to conclusion that private universities in the United States, which lead international rankings, achieved the highest level of competitiveness and further set goals of maintaining financial sustainability in particular and sustainable development in general. Gaining financial sustainability implies composition of an effective investment portfolio encompassing the funds of universities' endowments as well as optimization of management company organizational structure, and active academic entrepreneurship.

Based on the study of a large number of both Russian and international literature (not all of the definitions are included in this article), the authors define academic entrepreneurship as commercialization of the university's results derived from the intellectual activity of its employees. Moreover, the institute of academic entrepreneurship allows linking the interests of universities to business.

There are four main forms of academic entrepreneurship: academic research, research and development (R & D), start-up and spin-off.

Research activity allows obtaining the results of intellectual activity, which in the future can be patented, and the university would receive royalties from the implementation of research products. The same is true for experimental development implementing research results in prototypes obtained in university laboratories to be further commercialized.

Based on the research results or having involved talented students with a business idea, start-ups can be organized as a new innovative business, usually in the form of a small enterprise. The HEI could also receive income from the start-up activities undertaken on its site.

A spin-off within the university environment is a subsidiary of the university created by graduates or university staff, based on technology owned by the university. This form is prevalent in the educational environment abroad.

Leaders of global university rankings – Stanford, MIT and Harvard – have always been

models for promoting academic entrepreneurship, especially in technology transfers to the local community and business creation (Zhang, 2009). Top research universities have a long tradition of facilitating academic entrepreneurs. Strong entrepreneurial tradition among academicians was institutionalized in the form of so-called Offices of Technology Transfers which provide necessary support with regard to commercialization of research findings. Research expenditures are high to envisage start-ups and spin-offs at the end. Spin-offs companies and start-ups are vastly generated by MIT and Stanford.

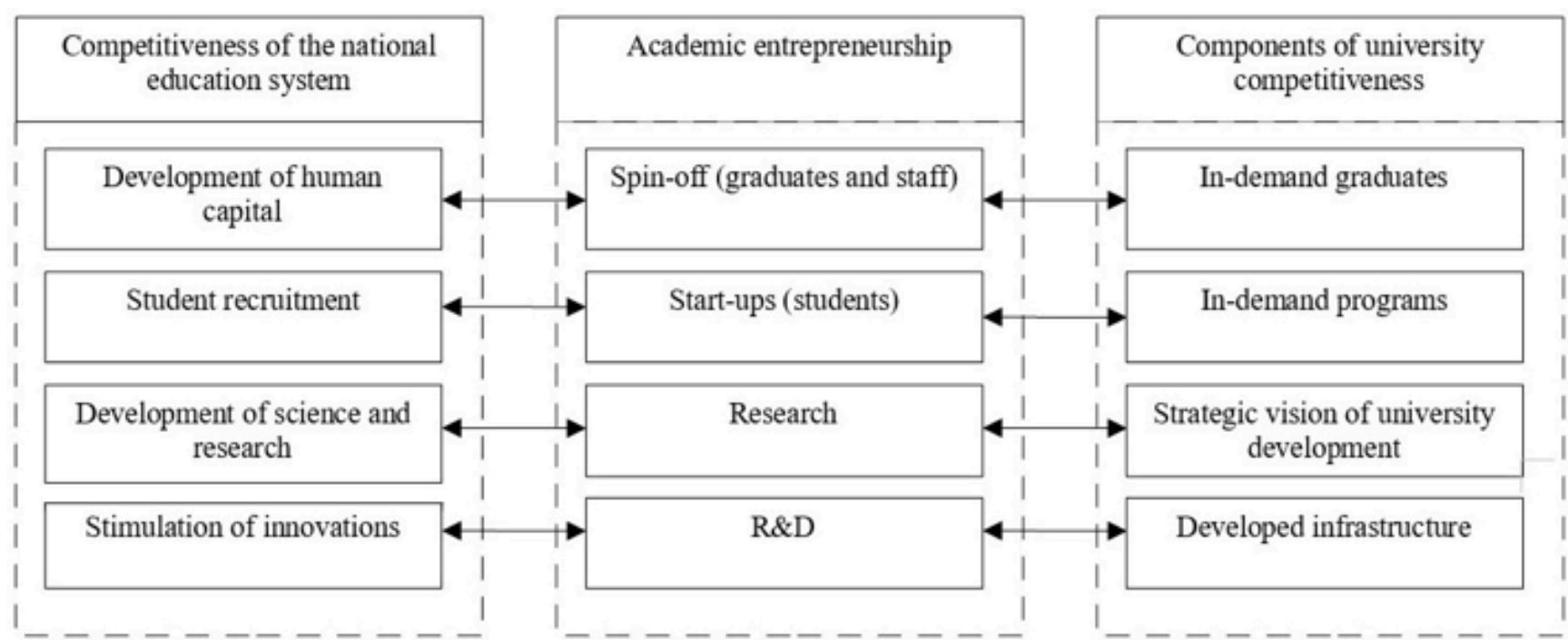
Next part of the article interprets the conceptual interrelation between components of HEIs competitiveness and academic entrepreneurship.

5. Discussion

Upon this research, it can be concluded that the university's competitiveness depends on the level of academic entrepreneurship. This statement is confirmed by the relationships discovered by the authors. Competitiveness of the national education system, an HEI (universities, in particular) and the institute of academic entrepreneurship have interrelated components (Figure 2).

Figure 2

Interrelation of components defining competitiveness of the national education systems, academic entrepreneurship, and university competitiveness



The development of human capital is encouraged by involving graduates and university staff in spin-offs. Empirical data related to recruitment of students to a university of economics and communication with them and their parents show that an opportunity to start own business (start-up) in the educational process is considered to be an attractive competitive advantage of the university for entrants. Developing science and research, stimulating innovations is a universally recognized basis for the academic entrepreneurship to be advanced.

At the same time, involving graduates in spin-offs demonstrates their educational level and demand for them. Educational programs resulting in the possibility to create a start-up (first of all, programs in economics were perceived) are in demand among university entrants. Most academic studies have a long-lasting effect. They accumulate scientific potential and give competitive advantages, in the long run, thereby lending support to the strategic development of an organization. The developed infrastructure is one of the preconditions for qualitative, qualified and successful research and development as a result.

Thus, a higher education institution is more competitive if it produces qualified specialists for the national economy and at the same time acts as an effective entity of the economy. A high portion of returns from knowledge transfer, in this case, comes from in-demand results of scientific and educational activities.

Theoretical significance of the research conducted is that academic entrepreneurship from

the articles published earlier is treated as an independent phenomenon, its development trends are estimated, comparative analysis of its level by countries is carried out, and however, interrelation between HEIs competitiveness, its position in the global rankings and the level of academic entrepreneurship has not been discussed before. Different academics understand the notion of HEIs competitiveness and academic entrepreneurship from different angles; nevertheless, all definitions have common components revealed by the authors in this study. Further, comparison was made in terms of components defined related to HEIs competitiveness and the institute of academic entrepreneurship that compose their common structure.

Practical significance of the study could be considered by HEIs which might apply results of the study for gaining competitive advantages. It means that HEIs should take into account academic entrepreneurship to achieve the highest positions in the global rankings.

6. Conclusion

The research allowed for a conclusion that the institute of academic entrepreneurship allows of achieving and maintaining a high level of competitiveness. Having devised a development strategy, developed infrastructure (that attracts the best entrants with high potential for learning), in-demand graduates and educational programs (demand for which might also depend on the infrastructure and a contingent of students), raising funds to maintain and develop its core activities affected by academic entrepreneurship, a higher education institution would certainly achieve high positions in the world educational rankings.

Future research on the current topic could be focused on the following possible directions such as analyzing trends by the objects studied, conducting multivariate analyses, performing calculations on competitiveness indicators identified and defining the level of turnover or profit from academic entrepreneurship generated by higher education institutions, further comparing two ratings, i.e. HEIs ratings by competitiveness indicators and by the level of academic entrepreneurship. The limitations of the research would be finding and comparing information in open access. The current study is limited by the amount of notions on HEIs competitiveness and academic entrepreneurship analyzed and showed partially in the paper due to its limits set externally. The authors carefully examined 40 definitions on HEIs competitiveness and 25 definitions on academic entrepreneurship.

The research in question is based on the previous works done in the field of higher education competitiveness and academic entrepreneurship, extending it and revealing their common components.

The research undertaken adds value to academic knowledge by extensive notions analyses on HEIs competitiveness and identification of common elements in all definitions which as the study has shown corresponds to the components of the academic entrepreneurship institute.

Bibliographic references

Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges. (2017, September), Stanford University. Retrieved from:

<https://wasc.stanford.edu/content/what-wasc-accreditation-process>

ASHOUR, S., FATIMA, S.K. Factors favouring or impeding building a stronger higher education system in the United Arab Emirates. *Journal of Higher Education Policy and Management*. Vol 38, year 2016, number 5, p. 576-591.

BECKMAN, C., BURTON, M., O'REILLY, C. Early Teams: The Impact of Team Demography on VC financing and Going Public. *Journal of Business Venturing*. Vol 2, year 2007, number 2, p. 147-173.

BELKIN, V.G, BABAK, L.N., KHEGAY, E.V., FILATKINA, I.D. The Development of Academic Entrepreneurship in Some Countries of the Asia-Pacific Region (overview of scientific publications). *Izvestiya DVFU. Economics and Management*. Vol 2, year 2016, p. 99-111.

CHENG, Y.C., KO, J., LEE, T.T.H. School autonomy, leadership and learning: a

reconceptualization. *International Journal of Educational Management*. Vol 30, year 2016, number 2, p.177-196.

CHOU, C.P., CHAN, C.-F. Trends in publication in the race for world-class university: The case of Taiwan. *Higher Education Policy*. Vol 29, year 2016, number 4, p. 431-449.

Competitiveness and Economic Development (2017, September), In Institute for Strategy and Competitiveness. Harvard Business School. Retrieved from:

<http://www.isc.hbs.edu/competitiveness-economic-development/Pages/default.aspx>

DE SILVA, M. Academic Entrepreneurship and Traditional Academic Duties: Synergy or Rivalry?. *Studies in Higher Education*. Vol 41, year 2015, number 12, p. 1–17.

JONES, G.R. *Organizational Theory, Design, and Change*. Prentice Hall. 2009.

KHEGAY, E.V., BABAK, L.N., FILATKINA, M.D., FILATKINA, I.D. Knowledge Management at the Higher Education Institution as a Factor of Academic Entrepreneurship Development. *Journal of Creative Economy*. Vol 1, year 2017, number 11, p. 45-60.

KIREEVA, N.S., SLEPENKOVA, E.V., SHIPUNOVA, T.S. Competitiveness of the national education system as a factor ensuring the global competitiveness of the country. *Economics of Education*. Year 2017, number 6, p. 65-78.

KOSSO, P. *A Summary of Scientific Method*. Springer. 2011.

KOVALENKO, A.I. Theoretical and Methodological Aspects of Application the Concept of "Competitive Ability" in Scientific Researches". *Journal of Modern Competition*. Vol 6, year 2013, number 42, p. 65-79.

LACHMANN, J. Le développement des pôles de compétitivité: quelle implication des universités?. *Innovations*. Vol 3, year 2010, number 33, p. 105-135.

LOMBARDI, R., LARDO, A., CUOZZO, B., TREQUATTRINI, R. Emerging Trends in Entrepreneurial Universities within Mediterranean Regions: An International Comparison. *EuroMed Journal of Business*. Vol 12, year 2017, number 2, p. 130-145.

MINOLA, T., DONINA, D., MEOLI, M. Students Climbing the Entrepreneurial Ladder: Does University Internationalization Pay Off?. *Small Business Economics*. Vol 47, year 2016, number 3, p. 565-587.

MIROLYUBOVA, T.V., SUKHANOVA, P.A. International Experience of Development of Innovative Infrastructure of Universities in Regional Innovative Systems. *Fundamental Research*. Year 2013, number 1, p. 215-220.

MIT Facts (2017), In Massachusetts Institute of Technology (MIT). Retrieved from: <http://web.mit.edu/facts/sustainability.html>

NABI, G., HOLDEN, R., WALMSLEY, A. From Student to Entrepreneur: Towards a Model of Graduate Entrepreneurial Career-making. *Journal of Education and Work*. Vol 23, year 2010, number 5, p. 22–38.

POPESCU, F. Globalization Strategies and Higher Education. A Dutch-Romanian Perspective. *Advances in Intelligent Systems and Computing*. Vol 498, year 2017, p. 1239-1250.

PORTER, M.E., RIVKIN, J.W., DESAI, M.A., RAMAN, M. Problems unsolved and a nation divided". *The State of U.S. Competitiveness*. 2016. Harvard Business School Survey on U.S. Competitiveness. Retrieved from: <http://www.hbs.edu/competitiveness/Documents/problems-unsolved-and-a-nation-divided.pdf>

QS World University Rankings 2018. In *Top Universities*. 2017. Retrieved from: <https://www.topuniversities.com/university-rankings/world-university-rankings/2018>

SAGINOVA, O.V. Competitiveness Indicators of Higher Education Institutions. *ETAP: economic theory, analysis, practice*. Year 2017, number 4, p. 116-125.

SVOBODOVA, L. Technological readiness and higher education in the Czech Republic. *IEEE Global Engineering Education Conference, EDUCON*. Year 2016, number 7474655, p. 874-882.

SYSOEVA, O.V. Formation of small innovative enterprises by state-funded scientific and

educational organizations, Ph.D. Thesis. Saratov: Gagarin Saratov State University of Technology. 2015.

ŠTIMAC, H., ŠIMIĆ, M.L. Competitiveness in Higher Education: a Need for Marketing Orientation and Service Quality. *Economics and Sociology*. Vol 5, year 2012, number 2, p. 23-34.

TARAKANOV, V., KALININA, A., KRYUKOVA, E. Training programs of transnational corporations as a foundation of formation of private educational resources. *International Journal of Educational Management*. Vol 31, year 2017, number 1, p. 38 – 44.

The Center for Sustainable Development and Global Competitiveness (2010), In Stanford University. 2017. Retrieved from <http://web.stanford.edu/group/sdgc/about.html>

ZAVYALOV, D.V. et al. The development of public entrepreneurship forms in the Russian economy. Novosibirsk: CRNS Publishing. 2017.

ZHANG, J. Why Do Some US Universities Generate More Venture-backed Academic Entrepreneurs than Others?. *Venture Capital*. Vol 11, year 2012, number 2, p. 133-162.

ZHU, T.-T., PENG, H.-R., ZHANG, Y.-J. The Influence of Higher Education Development on Economic Growth: Evidence from Central China. *Higher Education Policy*. Year 2017, p. 1-19.

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