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INVESTIGATION OF RISK IN THE ACTIVITIES OF HIGHER EDUCATION INSTITUTIONS IN THE CONTEXT OF SECURING THEIR ECONOMIC SAFETY

Проведено аналіз поняття «ризик», при цьому враховано його значення у контексті забезпечення економічної безпеки та надійності захисту інтелектуального капіталу вищих навчальних закладів, що переміщені з тимчасово окупованих територій. Розглянуто економічні наслідки від їх переміщення шляхом аналізу зміни рейтингових позицій цих ВНЗ за 2013–2017 роки з порівнянням надійності захисту інноваційного та людського капіталу.

Ключові слова: вищі навчальні заклади (ВНЗ), економічна безпека ВНЗ, захист інноваційного та людського капіталу.

1. Introduction

Higher education institutions (HEIs) in modern conditions simultaneously act as important elements of the socio-economic system and business entities. In this connection, they function under conditions of risk and uncertainty, are under the negative influence of a number of factors of the external and internal environment, form dangers. Economic security of economic entities in modern conditions is largely determined by the effectiveness of management of intellectual capital. Therefore, taking into account the importance of the intellectual component in the activity of the university, the protection of intellectual assets becomes urgent in ensuring their economic security. At the same time, the ratings of higher education institutions play an important role, they can be considered indicators of the quality of higher education. The deterioration of the positions of universities in the ratings of universities is a consequence of increasing threats to the activities of universities and the formation of risks to their activities.

2. The object of research and its technological audit

The object of research is the process of ensuring the economic security of higher education institutions, taking into account the need to effectively manage their intellectual capital. One of the most problematic areas is the insufficient level of methodological, personnel support, international scientific ties and material and technical support for the activities of the university displaced from temporarily occupied territories. The volumes of budget financing and financing from non-governmental international organizations were related to the latter, and the possibilities for restoring educational and research activities were identified.

3. The aim and objectives of research

The aim of research is clarification of the essence and content of the «risk» category from the perspective of

ensuring economic security and identifying threats to the intellectual capital of HEIs, displaced from temporarily occupied territories. To achieve the aim, the following tasks are set:

1. To determine the changes in the integral index and the place in the TOP-200 rating of Ukraine for higher education institutions before and after moving from temporarily occupied territories.

2. To investigate the genesis of the «risk» notion and develop an approach to the definition of risk in the conceptual-categorical apparatus of economic security, in particular universities.

3. To determine the directions of reducing the risks of functioning of the higher education institution as subjects with a significant intellectual component of activities in the context of ensuring their economic security.

4. Research of existing solutions of the problem

Theoretical and methodical aspects of ensuring the economic security of the university in the context of globalization and increasing competition in the markets for educational services, taking into account the requirements of the labor market and employers are reflected in publications [1–4]. The issue of economically sound development of higher education institution in the context of the formation of a full national innovation system has a particular importance, as indicated in [5, 6]. Despite a large number of scientific developments in the field of research, there is a need to conduct research on the characteristics of such categories as «risk».

Investigation of the essence of the «risk» concept testifies to the existence of common approaches by the authors to its interpretation. It should be noted that the majority of researchers in scientific works allocate economic risk to risk, while at the same time, in most scientific works, its economic component is present in the definitions of risk of a certain degree.

However, in general terms, the definition of risk as a category is given in the dictionary [7], according to

which the risk represents the possibility of an event, indicates the probability of its quantitative measurement, and is identified with the danger. A similar approach is observed in [8], in which the «threat» is identified with the «danger», and the terms «risk» and «threat» are used as synonyms.

In [9–15], an approach is considered, according to which an event can be classified as a «risk» from the position of the possibility of calculating losses (non-observance of profits) in the event of adverse events.

In the research concepts of the University of Zilina (Slovakia) there is concreteness and the possibility of measuring risk and then considering risk as a measure of threat is a potential danger. This approach provides for the possibility of risk management, while the category of «uncertainty» is the lack of the possibility of existence of alternatives and their estimates [16].

Attention deserves the definition and characteristics of risk as a certain conditional detail of the hazard [12], besides the risk can be both a part of the threat and a conscious action, which can bring negative consequences and become a threat. [16] The following definition is also very important from the point of view of ensuring the economic security of higher education institution: «risk» is an objective-subjective category associated with a certain degree of uncertainty of the result due to a taken decision (action and/or circumstances) [17, 18].

In general, given the versatility of approaches to the interpretation of the «risk» concept, it should be noted that the risks act as a detail of the threats and can result, as a result of the negative influence of the factors of the external and internal environment, in the growth of losses in the social and economic sphere of the state. Thus, there is a need to develop various approaches for concretizing the concept of risk in relation to ensuring the economic security of the higher education institution. At the same time, the risk can be defined as the

detailing of threats to the HEIs activities of, in conditions of negative influence of external and internal factors can lead to financial and economic losses.

5. Methods of research

The general scientific and special methods of scientific research are used:

- system-logical approach for the investigation of the genesis of the «risk» concept;
- the method of analysis and synthesis in determining the change in the integral index and the place in the ranking of TOP-200 Ukraine higher education institutions displaced from the temporary occupied territories;
- theoretical generalization in determining scientific approaches to understanding the essence of the category «risk» and its relationship with such concepts as «danger», «economic danger» and «threat»;
- structural and logical, terminological and semantic analysis for determining the risks of the functioning of higher education institutions in conditions of external aggression and the possibilities for protecting intellectual capital in higher education;
- formulation of proposals for specification of the «risk» term interpretation in the conceptual-categorical apparatus of economic security in terms of economic security of the higher education institution;
- system-structural analysis when studying the process of rating positions of higher education institutions;
- methods of systematization and generalization to determine the directions for reducing the risks of the HEIs functioning displaced from temporarily occupied territories in the context of the positive impact of these changes on their economic security, with subsequent shifting of tendencies to Ukrainian higher education institutions.

Table 1

The value of the integral indicator of higher education institutions (HEIs) in the rating TOP 200 Ukraine/the HEIs place in the rating TOP 200 Ukraine

Higher Education Institution	The integral index of the higher education institution in the rating/place of the higher education institution in the rating TOP 200 Ukraine			
	2014	2015	2016	2017
Donetsk National Technical University (DonNTU)	31.4/18	39.0/16	34.8/20	32.1/25
Vasyl' Stus Donetsk National University (Vasyl' Stus DonNU)	28.1/23	35.63/20	32.7/25	31.6/27
Volodymyr Dahl East Ukrainian National University (SNU)	27.1/30	32.8/27	31.2/34	27.7/41
Donetsk National University of Economics and Trade named after M. I. Tugan-Baranovsky	17.0/116	20.2/115	19.5/120	18.3/137
Donbass State Technical University (DonSTU)	13.9/164	16.6/151	14.9/169	14.6/173
Donbas National Academy of Civil Engineering and Architecture (DonNACEA)	23.1/58	26.5/52	25.4/58	22.7/74
Taras Shevchenko National University of Luhansk (LNU)	29.8/21	33.0/25	31.1/31	27.3/64
Donetsk National Medical University (DonNMU)	28.1/23	33.3/23	31.6/30	22.3/85
Taurida National V. I. Vernadsky University (TNU)	26.8/32	32.9/26	–*	18.8/127
SE «Luhansk State Medical University» (SE LDMU)	22.6/61	25.2/61	24.5/67	16.7/154
Donetsk State University of Management (DonSUM)	22.2/65	25.1/64	24.5/66	20.3/112
Luhansk National Agrarian University (LNAU)	19.5/90	20.0/118	18.6/123	16.0/162
Luhansk State Academy of Culture and Arts (LSACA)	–*	12.4/195	11.4/197	–*

Note: * – Higher Education Institution is not in the rating for the specified period.

6. Research results

According to the rating of the TOP-200 higher education institutions of Ukraine [19], the integral indicator is formed according to the following criteria:

- evaluation of the quality of scientific and pedagogical potential;
- evaluation of the quality of training;
- evaluation of international recognition.

According to the rating, TOP-200 Ukraine for 2013–2017 analyzed the changes in the integral indicator and the place in this ranking of higher education institutions displaced from temporarily occupied territories for 2013–2017 [19–22] (Table 1).

Table 1 includes 13 of 18 HEIs, displaced from the temporarily occupied territories of the Crimea, Donetsk and Luhansk regions [23]. Since such higher education institutions as the Donetsk Regional Institute of Postgraduate Teacher Education, Gorlovka Institute of Foreign Languages of the State Higher Education Institution «Donbass State Pedagogical University», Luhansk Regional Institute of Postgraduate Teacher Education, were absent in the TOP 200 Ukraine ratings for 2013–2017 [19–22].

Comparison of the ratings of universities according to Table 1 shows that despite the objective difficulties in the organization of the educational process (insufficient level of necessary scientific and methodological and logistical support, significant personnel losses, as well as reduction of the contingent of students), the first group of six HEIs did not leave the limits of its fifty in the TOP-200 universities (ranked 2013/ranked 2017):

- DonNTU – (18/25);
- Vasyl' Stus DonNU (23/27);
- SNU (30/41);
- DonNUET named after Mikhail Tugan-Baranovsky (58/74);
- DonSTU (116/137);
- DonNACEA (164/173).

Against the backdrop of growing competition between Ukrainian HEIs for applicants and relatively difficult conditions for the functioning of new places of temporarily displaced universities, their positions in the ratings of 2013–2017 are decreasing. However, the first 5 of the first group of these HEIs could even improve the value of the integrated index of the TOP-200 rating (Table 2).

The second group of displaced HEIs should include universities in which the rating positions worsened and

the integral indicator for the period 2013–2017 decreased, in particular (the place in 2013/place in 2017):

- LNU (21/64);
- DonNMU (23/85);
- TNU (32/127);
- SE LDMU (61/154);
- DonSTU (65/112);
- LNAU (90/162).

Beginning from 2015/2016, the methodology of rating TOP-200 Ukraine was improved by additional introduction of the criterion «Innovative activity of universities» in the calculation of the index of quality of scientific and pedagogical potential. This criterion quantifies the volume of investment from private and high-tech businesses (in the development of scientific parks, industrial clusters, individual start-ups, projects, etc.). In addition, to assess the international recognition of an education institution, its participation in the programs «Horizon 2020», TEMPUS, Erasmus+ and others is additionally taken into account.

The above innovations in the rating have strengthened such influence factor as an «intellectual component» through the evaluation of innovative activity and the development of scientific and pedagogical workers. This determined some redistribution of ranking places among universities in 2015/2017 in favor of technical or classical universities with a worldwide level of recognition of academic and academic achievements and traditions.

In turn, the increase in indicators for assessing innovation and the development of scientific and pedagogical staff allows to compare the reliability of protection of innovative and human capital as components of the intellectual capital of the university. The data of Table 2 show that the index of international recognition, namely the number and volume of financing of projects and grants under the European programs «Horizon 2020», TEMPUS, Erasmus+, etc., became decisive for the ranking of 3 of the first group of temporarily displaced higher education institutions.

So, despite a slight decrease in the index of quality of education in the Volodymyr Dahl East Ukrainian National University and the tangible deterioration in the quality index of the scientific and pedagogical potential in Vasyl' Stus Donetsk National University, this university and Vasyl' Stus Donetsk National University, thanks to their active participation in international research programs, it was possible to improve the integrated rating for 2013–2017. The number of TEMPUS IV PROJECTS in these institutions varies from 3 to 6 for 2013–2017, not counting the mobility program.

Table 2

Indices of the integrated indicator of the ranking of higher education institutions (HEIs) in 2013–2017 [19–23]

HEI (Ranking in 2013/2017)	Quality of scientific and pedagogical potential		Quality of teaching		International recognition	
	2013	2017	2013	2017	2013	2017
DonNTU (18/25)	9.6	10.2	9.5	9.7	12.3	12.2
Vasyl' Stus DonNU (23/27)	15.1	9.7	5.6	9.7	7.4	12.1
Volodymyr Dahl East Ukrainian National University (30/41)	6.8	8.3	7.7	7.3	12.7	12.0
Donetsk National University of Economics and Trade named after M. I. Tugan-Baranovsky (58/74)	6.3	8.0	5.6	6.7	11.1	8.0
DonSTU (116/137)	6.6	7.5	4.0	5.0	6.4	5.7
DonNACEA (164/173)	3.8	5.5	3.9	4.3	6.1	4.9

At the same time, with the positive dynamics of the indices of quality of the scientific and pedagogical potential and the quality of education, while simultaneously the negative dynamics of the index of international recognition, the rating in the other 3 of the first group of temporarily displaced HEIs is significantly deteriorating:

- Donetsk National University of Economics and Trade named after M. I. Tugan-Baranovsky (number of international projects – 2);
- DonSTU (number of international projects – 1);
- DonNACEA (number of international projects – 1).

Thus, the results of a comparative analysis of the dynamics of the rating positions of universities indicate that one of the areas of risk reduction in the activities of HEIs is the protection of intellectual resources and the provision of their use in the face of increasing threats to their functioning. In particular, it is advisable to use the integrated indicators of their ratings as intermediate indicators, in particular in the formation of a balanced system of indicators (Balanced Scorecard – BSC) to assess the level of economic security of HEIs [24].

Taking into account the above, among the measures to reduce the risks of the functioning of HEIs, have been moved from temporarily occupied territories, it is possible to single out (with subsequent use in the activities of other HEIs) the following:

- implementation of international business integration and academic mobility programs;
- development and implementation of development programs for scientific and pedagogical workers;
- creation of entrepreneurial and innovative structures within the framework of projects for the development of regions of different types, types and scales.

7. SWOT analysis of research results

Strengths. The strength of research is:

- use of the system-logical approach to the development of the «risk» concept;
- conducting a comparative analysis of integrated indicators in the TOP-200 Ukraine ranking for 2013–2016 for higher education institutions displaced from temporarily occupied territories.

Weaknesses. The weak side is the absence of certain data for carrying out the system-structural analysis of the performance indicators of universities, which form their rating positions in the TOP-200 Ukraine.

Opportunities. Opportunities of using the research results associate with determining the directions of reducing the risks of the functioning of HEIs due to the buildup of intellectual capital in the context of a positive impact on their economic security.

Threats. Threats to the results of the conducted research are that, due to the specific nature of the functioning of the study group of universities, proposals to reduce the risks of functioning and protect intellectual capital in the sphere of higher education will not have a universal character.

8. Conclusions

1. The conducted study of the change in the integral index and the place in the rating of TOP-200 Ukraine of higher education institutions displaced from temporary

occupied territories for 2013–2017 indicates that the first group of six HEIs did not leave the limits of its fifty in the top 200 universities. At that, the first 5 managed to retain and even improve the value of the integral indicator.

2. The «risk» notion as a detailed elaboration of the threats to the activity of the higher education institution, which can result as a result of the negative influence of factors of the external and internal environment in financial and economic losses, is concretized in the conceptual-categorical apparatus of economic security of the university.

3. The directions of reducing the risks of the functioning of higher education institutions have been determined, they have been moved from the temporarily occupied territories in the context of the positive impact of the reliability of the protection of intellectual assets on their economic security, followed by the transfer of tendencies to Ukrainian HEIs:

- implementation of international business integration and academic mobility programs;
- development and implementation of development programs for scientific and pedagogical workers;
- creation of entrepreneurial and innovative structures within the framework of projects for the development of regions of different types, types and scales.

Further research suggests the development of a methodical approach to assessing the HEIs economic security by using integrated indicators of their ratings as intermediate, in particular, in the formation of a balanced system of indicators adapted to the HEIs needs.

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ИССЛЕДОВАНИЕ РИСКА В ДЕЯТЕЛЬНОСТИ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ В КОНТЕКСТЕ ОБЕСПЕЧЕНИЯ ИХ ЭКОНОМИЧЕСКОЙ БЕЗОПАСНОСТИ

Проведен анализ понятия «риск», при этом учтено его значение в контексте обеспечения экономической безопасности и надежности защиты интеллектуального капитала высших учебных заведений, перемещенных с временно оккупированных территорий. Рассмотрены экономические последствия от их перемещения путем анализа изменения рейтинговых позиций этих ВУЗов за 2013–2017 годы со сравнением надежности защиты инновационного и человеческого капитала.

Ключевые слова: высшие учебные заведения (ВУЗы), экономическая безопасность ВУЗов, защита инновационного и человеческого капитала.

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