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STRATEGIC RISK MANAGEMENT IN THE DEVELOPMENT OF UNIVERSITY EDUCATION IN UKRAINE

Purpose. To analyze the risks in the development of university education in Ukraine, to present a model of strategic risk management.

Methodology. The authors used the following methods:

- scientific generalization to justify the characteristics of current risks, the development of university education in Ukraine;
- the logical method allowed the authors to formulate conclusions, risk signs and indicators;
- the modeling method allowed presenting risk management in the form of a structural model.

Findings. The risks in the development of university education in Ukraine were identified and justified. A mathematical model of strategic risk management was proposed. The authors developed risk mitigation recommendations based on their relevance to universities presently and in future.

Originality. The current risks in the development of university education in Ukraine were analyzed, scientific ideas of possible solutions to mitigate them were proposed, a strategic risk management model for the near future and in perspective is presented.

Practical value. The practical implementation of the mathematical model of strategic risk management provides an algorithm of actions to reduce or eliminate them. The results of the study of the problem considered can be useful to the leadership of universities, experts on rating assessment of universities, the Department of Higher Education of the Ministry of Education, scientists when studying trends and risks. The degree of elimination and mitigation of risks can be one of the main criteria for evaluating the activities of the university, its structural divisions, managers, scientific and pedagogical staff.

Keywords: *strategy, management, risk, mathematical model, university education*

Introduction. It is well known that education is a priority throughout the world. Its current state and development determine the future of the country. Due to many internal and external risk factors, its uncertainty intensifies, while forecasting the development of education, in particular higher education, for the next decades is complicated.

Literature review. Research on educational management has been carried out by N. Boyko, G. Karpenko, O. Mozgovoy, O. Stupin, V. Sheiko, M. Shepelev. The risk theory, founded by J. Neumann and O. Morgenstern, was improved by V. Algina, E. Astakhova, I. Balabanova, V. Buyanova, V. Vitlinskaya, O. Ustenko, I. Kalenyuk, T. Kostyukova, I. Lysenko, E. Lavrysheva and others.

So, researchers T. Kostyukova and I. Lysenko consider the market situation analysis, identification of the problem for risk management. Calculations based on the cost break-even analysis made it possible to predict the number of students and the price for education students which allows getting a minimal profit.

Our point of view coincides with that of the researcher E. Lavrysheva, who believes that the management of educational risks in higher education is associated with diversification, distribution of responsibility, and classification of risks by danger degree.

Zakharov N. and Ilyina T. see a quantitative risk analysis using the method of expert assessments as a convincing decision in risk management in universities.

Unsolved aspects of the problem. Despite the great diversity of their research, the emerging risks in the development of modern university education in Ukraine and relevant issues of their strategic management require attention of researchers in modern science and practice. Strategic management is characterized by the development of strategic planning for the near and long term future. Strategic planning, in turn, is considered as the formation of a strategy (goals and methods for organizational changes in universities that are adequate to changes in the external environment over a defined period of time). Strategic planning includes consideration of education, activities: scientific, international, entrepreneurial, innovative, and others. The defining feature of university management is, above all, the intelligence of the entire staff. P. Doyle understands the strategic management as setting of tasks and the choice of methods for planning development.

The successful functioning of universities in modern economic conditions depends on a competitive strategy, rising of their rating. Universities strive to obtain more favorable economic conditions, attract more students, and improve their status. The competitiveness of a university also depends on the development of partnership in science and business, international relations, creation of its own effective innovative enterprises for scientific, educational and entrepreneurial activities.

Successful activity of the university is primarily provided by the quality management system of specialists' training; the availability of updated copyright educational programs, modern material and technical base; domestic and international

relations with other universities and enterprises, which allows future specialists to get the necessary practice, to get acquainted with various innovative technologies.

As it is known, there are several strategies to increase the competitiveness of universities: horizontal and vertical integration processes [1].

Horizontal processes include university entrepreneurial activity, the expansion of rendered educational services, domestic and international cooperation with science and business. Vertical ones take into account continuing education and connect the university's activities with secondary schools, universities and business. The common thing in these processes is the presence of entrepreneurial activity, which allows obtaining additional economic benefits for development of research and improvement of the educational process quality, preservation and creation of scientific schools, reduction of risks in university education.

The variety of risks is characterized by various indicators. Risks have their own features. As many researchers correctly note, the activities of universities are affected by: changes in legislation, inventory and technical supply, decrease in a number of students educated, poor quality of educational services, insolvency of population, ineffective structure of the university, and the lack of a risk management strategy at universities. The risk management strategy in the development of university education should take into account the algorithm of risk situations, the use of various rules, approaches, and risk management methods. Strategic planning and forecasting of the socio-economic situation will allow identifying the impending risks that will weaken the university work, and developing a set of preventive measures.

There is no universally recognized theoretical approach to the problem of risk management in the field of university education. There are different interpretations in the approaches to classification and the definition of risk assessment methods.

It should be noted that many scientists in higher education in Ukraine traditionally divide many risks into two main groups: external and internal (globalization, technological challenges, political risks, legal risks, economic, demographic, staff qualifications, insufficient funds for development, the training level of applicants, management system, outdated inventory, technical and educational laboratory base, weak marketing policy) [2].

Many domestic and foreign scientists distinguish risks in: changing legislation, reducing the budget component of financing, competition among universities, changing labor market conditions, insufficient quality of education, insufficient development of the material and technical base, insufficient qualifications of lecturing and teaching staff, violation of relations between lectures and students, inefficient university management, corruption, and so on.

Purpose. However, in recent years, other equally important educational risks have appeared in the university education of Ukraine, which can lead to serious economic and social losses.

The purpose of the article is to analyze the risks in the development of university education in Ukraine, to present a model of strategic risk management.

Methods. The authors used the following methods:

- scientific generalization to justify the particularities of actual risks, the development of university education in Ukraine;
- the logical method allowed the authors to formulate conclusions, risk indicators;
- the mathematical modeling method made it possible to present risk management in the form of linear (static and dynamic) models.

Results. In the framework of our study, the risks of university education in Ukraine are defined as a danger, a deviation in the development of higher education from the intended goal. Therefore, risks should be managed in order to minimize losses.

Strategic risk management in the development of university education in Ukraine means such a process of strategic management decisions at the state level and at the level of university leaders that identifies the widest range of possible risks, their justification and minimizing of their effects in order to reduce or eliminate risks in the near and long term future. The general risk management scheme in the development of university education in Ukraine includes risk management planning, risk assessment taking into account their analysis and identification, development and implementation of risk management, and risk monitoring.

At the first stage of strategic risk management, we consider a wide range of all kinds of risks, taking into account their internal potential and external environment in all kinds of areas of university education.

From our point of view, all kinds of risks can be classified according to the following main criteria: **(A) scientific-pedagogical and administrative personnel** (gerontological risk, migration risk, mental-corruption risk, information-dynamic risk); **(B) students, listeners and other subjects of study** (the risk of a weak inflow of applicants to universities, the risk of decline in the quality of secondary education, the risk of increase in non-professionally oriented contingent of applicants in the university system, the stable continuing of wave trends of applicants to be enrolled in "prestigious" specialties); **(C) economic, social explosion** (the number of students, business partners, sudden emergence of catastrophes: epidemiological risk, environmental, military, and others); **(D) political** (inconsistency of educational political reforms).

Analysis of identified risks, finding solutions to mitigate them will improve the quality of education, predict the activities of the university in the near and long term future.

The analysis reveals the strengths and weaknesses of university education, internal influence factors (the potential impact of leadership, the team), external influence factors (risks and opportunities), assessment of these factors.

A phased model of university education with appropriate solutions is developed after university leaders in close cooperation with their staff made a detailed analysis. The university authorities, conducting a risk study, should focus on forecasting management capabilities in risk situations. With the growth of the modern market of educational services and the escalation of the demographic situation, the university that will attract the largest number of students and business partners can win the competition. Thus, to determine the rating of a university, strategic management should take into account the region and the degree of escalation of its internal problems [2].

Therefore, the solution of the most important tasks to reduce or eliminate risks is assigned to the university authorities and the ability to choose the best methods of strategic risk management.

Optimal solutions are selected on the basis of risk analysis, accepted standards of educational services quality; the activities of universities (with forecasting the situation in near and long term future), consideration of decisions and application of appropriate methods for influencing risks.

Based on the above outlined material, we consider in more detail the features that make it possible to identify risks taking into account their internal potential and external environment in all kinds of areas of university education.

Feature A (scientific-pedagogical and administrative staff) takes into account the consideration of risks, within which university studies take into account: the intellect of the entire staff, fundamental and applied research, creation of a stimulating environment, quality of fundamental tasks of education and science, the expansion and strengthening of scientific and pedagogical schools, cooperation with other educational institutions and organizations, participation in international cooperation in the field of science and international technologies, creation and development of scientific centers for implementation of scientific innovative technologies and products, de-

velopment and testing of new educational author programs, educational methods taking into account creation of conditions for continuing education, formation of students' competence (professional and personal).

Feature B (students and other subjects of education) includes risks associated with: creation of conditions for training foreign students, with a decrease in the number of students being trained, and the quality of secondary and higher education; the level of training of applicants, masters, postgraduate students and doctoral students.

Feature C (economic, social explosion) is associated with the entrepreneurship of a university, the market for educational and scientific services, planning of financial resources in changing market conditions for a certain period of time, social disasters.

Feature D (political) covers the reforms carried out in the education system as a whole.

By identifying risks in time, it is possible to evaluate their consequences and make timely management decisions to eliminate or reduce them.

We identify the actual risks that are included in the considered earlier features on the presented strategic management model in the development of university education in Ukraine according to the described features A, B, C and D, as it shown in (Figure).

When choosing the identification of risks, the significance of indicators and forecasting of new risks, it is possible to use the forecasting method (for example, the method of expert assessments, answering the question why one or another risk may arise, how, where and when it can arise). When choosing the significance of indicators, risks are assessed using qualitative and quantitative analysis. During the qualitative analysis, risk indicators are determined (under what circumstances they arise), with appropriate confirmations by the methods of qualitative analysis. Quantitative risk analysis involves assigning a numerical value to a risk and is carried out using the following methods: expert estimations, statistical, analytical methods and others.

The model (Figure) shows the reverse sequence from the control and implementation of the results to the identification of risks.

By timely identification of risks, it is possible to evaluate their consequences and make timely management decisions to eliminate or reduce risks.

When making management decisions to reduce or eliminate the corresponding risks, optimal decisions are chosen taking into account the significance of the risks themselves and their indicators. Collective methods are noteworthy, among which the methods of forecasting, brainstorming and many others are common.

The model (Figure) shows the reverse sequence from the control and implementation of the results to the identification of risks.

A decision tree is built using various methods for making management decisions. Various university departments plan and evaluate the work on mitigating risks using software. At this stage of strategic management it is necessary to evaluate the effectiveness of methods and means of influencing risks, make decisions on the use of optimal means to adjust the degree of risk.

Control and implementation of the results lead to the correction of the quality of educational services of university education after conducted market research on elimination or reduction of risks. A repeated risk assessment should be performed to verify the effectiveness of management decisions. At this stage of strategic management, it is necessary to assess how the risks have changed compared to the previous values and find out about the possible emergence of new risks.

We consider identifiable risks on these features separately.

Gerontological risk is the risk associated with the disappearance of the older generation, which has created the basis for fundamental education in the country. It is generally known that the average age of doctors of sciences in Ukraine has crossed the 65-year age border, and that of candidates of sciences has reached the mark of 50 [3]. For this reason, higher education institutions are replenished with personnel with low scientific and pedagogical potential. This leads to the destruction of domestic scientific schools and the loss of many scientific areas. In addition, the continuity of scientific schools is violated, without which scientific, cultural, or economic progress is impossible. After all, it is well known that the fate of Ukraine, like any other state, entirely depends on the state and prospects of the development of its intellectual resources. Scientific schools, chaired by experienced scientific leaders, are characterized by the presence of different generations. Their joint scientific activity aimed at the productivity of research is distinguished by the constant growth of the scientific qualifications of school participants, growing up original, independent, competent in appropriate field of research thinking researchers. The mutual penetration of knowledge, scientific approaches, the transfer of experience is carried out during creation of joint monographs, textbooks, articles and other published literature, as well as when working together at seminars, conferences, round tables, and others.

Information-dynamic risk is the risk associated with an increase in the huge flow of information processes and the impossibility of its timely processing. Online courses already exist at universities. According to statistics, the percentage of students who quit these courses is quite high. Apparently, such an emerging system of education should be improved. In this regard, the lecturer himself/herself needs to study continuously the information and include it in the pedagogical process. Massive open online courses began to appear rapidly in various countries of the world, video courses of educational disciplines in higher and secondary education.

Tom Nichols in his book (2019): "The Death of Expertise: how the Internet kills scientific knowledge" points out the danger of the information environment, expressing the idea that the Internet often allows people to describe intellect, giving the illusion of expert knowledge. Due to the "Internet accessibility" of educational material, a student may not be ready to see a perspective direction of the studied subject problem. The lecturer should help to do it.

According to many researchers, dealing with information congestion today is becoming increasingly difficult. With an

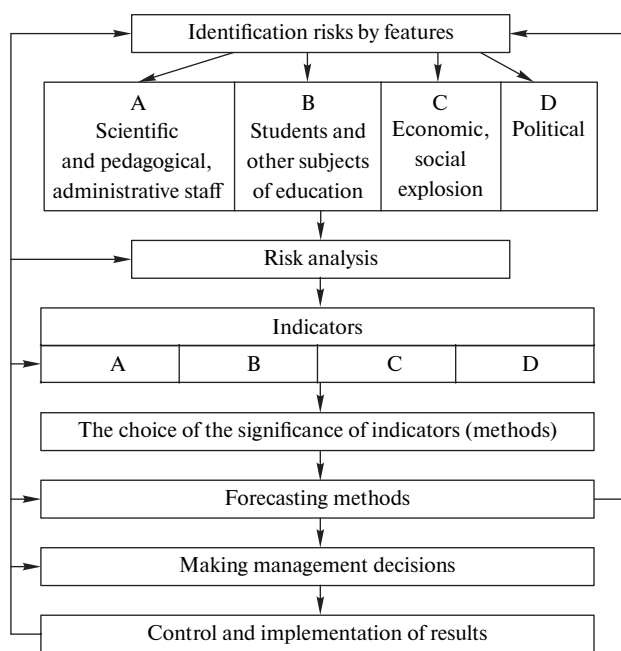


Fig. Strategic risk management model in the development of university education in Ukraine

increase in the information volume among the people tested, the activity in the frontal brain lobes, responsible for emotions and the decision-making process, was observed. When the flow went off scale, a person had brain freeze, made less constructive decisions, made mistakes. The famous American writer David Schenk in his book "Informational smog: survival in the conditions of informational glut" advises following the informational diet, otherwise the attention is scattered; the brain cannot stand it.

Sociopsychologist Pavel Frolov from Ukrainian Institute of Social and Political Psychology, when studying the preferences of Ukrainian population on the basis of comparison with previous years, published the results of excessive consumption of information among people, indicating that society feels the growing pressure of the information field.

Scientists exploring the phenomenon of information congestion believe that it poses a serious health hazard.

A decline in the quality of secondary education is a risk associated with weak preparation of school education, narrowed to the marks of "ZNO" (EIA (External Independent Assessment) certificates. There is a degradation of basic and complete school education due to the unification of many school subjects, deceleration of the bio-psycho-social development of youth and the influence of media dependence [4].

Based on the PISA test (Program for International Student Assessment), conducted in Ukraine in 2018 [5], the studies showed that the level of Ukrainian schoolboys' knowledge in reading, mathematics and natural science is below average.

Sustainable conservation of wave trends in the admission of applicants to "prestigious" specialties is a risk associated with the fact that applicants choose common specialties, which does not guarantee a balance in the labor market and educational services. According to many leading employers, for example [6], students need to strive to be competent and professional in profession they chose, and then there will be no problems with demand. If the choice is made correctly, then the involvement and motivation will be higher, and this will lead to high competence in the area of interest. If the choice of profession is, for example, the choice of their parents (an imposed one), or the pursuit of prestige (which, in turn, can change), then the awareness of the need to study again often appears at the age of 25-30-35.

It should be noted some unclaimed professions (the market of these professions is full), among which there are lawyers, economists, insurance agents, personnel managers, and others. A number of vacancies of philologists is smaller than a number of vacancies of sales consultants by about hundreds times. That is why, people who have, for example, a diploma in Languages, are forced to work as administrators, translators, office managers, and so on. At the same time, it is very difficult to find a qualified turner, milling machine operator or technologist. There is a shortage of technical specialists, mechanical engineers, agronomists and many other professions. According to information from employers, technical specialties in Ukraine are losing popularity among young people. In order to solve personnel problems, it is necessary to improve the system of training specialists and increase wages.

An increase in the non-professional contingent of applicants in the university system is a risk caused by the fact that some students later formally finish their studies and after graduation do not work in their specialty. According to statistics, in 2019, 50 % of unemployed people in Ukraine have higher education [7]. More than 50 % of students believe that participation in research work should be voluntary, and no more than 15–16 % show interest in this type of activity. Surveys show that 30–40 % of young people go to postgraduate school not because of an interest in science, but to avoid serving in the army, to be able to earn money in conditions of unemployment, to get accommodation in a dormitory of a big city, and so on. The attraction of a chosen university territory, the opportunity to find a job in cities with a multidisciplinary structure of the

economy and a socio-cultural environment, the cost of training are typical for some contingents of applicants.

In recent years, Ukrainian universities attract students from other countries. Most students are from Morocco, India, Algeria, Turkey, Romania. Analysts affirm that Ukraine is chosen mainly on financial basis. Housing and education are inexpensive in our country. Therefore, young people who are not able to pay for tuition in their countries come to us.

The inconsistency of educational political reforms is the risk associated with the cyclical implementation of demonstrative changes in governmental management of education "from election to election". It is necessary to realize the prospect of the development of society, the capacity of the state, cultural and historical characteristics of people. In view of this, it is timely and appropriate to carry out educational reforms at the level of political reforms, which may not give quick results, but provide a future perspective. Reforms, therewith, should be carried out sequentially, "trying quickly and decisively to overcome the resistance of narrow interests, but provide the opportunities to wide groups for adaptation" [8].

As analysts correctly say, the plan will not work without strategic management, which spots bottlenecks and on this basis corrects the existing situation. This should be done by "a special analytical body, of course, beyond the government and maximally equidistant from possible influences – whether it is selfish or emotional ..." [9].

Thus, the Parliament of Ukraine intends to consider the draft law No. 2299 "On amendments to certain laws of Ukraine on improvement of educational activities in the field of higher education". Possible changes relate to the "student-oriented studying" – an approach in which there will be a sharp reduction in lectures, practical training along with an increase in independent mastery of educational material. At the same time, training programs will be prepared by teachers personally without the control of the Ministry of Education and Science.

Migration risk is a risk associated with the irrevocable outflow of the best specialists with subsequent professional assimilation in foreign societies, external and internal emigration. According to numerous studies on the personnel corps of higher education in the 90-s of the 20th century, a university professor received 450–500 rubles per a month, an associate professor – 250–320 rubles. The average professor's salary increased from the late 90-s to the year 2019 by more than 12–14 times and the salary of associate professor increased by 12–15 times. However, in the same period, prices for basic foodstuffs raised by more than 20–50 times, prices for utilities raised by more than 40–80 times, for transport by more than 80–120 times, for books by 40–100 times, and so on. The annual teaching load of a lecturer increased by about 2.5–3 times during this time. Mass migration of leading scientists, students and young people, promising specialists from Ukraine at the turn of the 20th–21st centuries brought negative trends.

Most students study in Poland, many of them study in the Czech Republic and other neighboring European states. According to the study of the analytical center and the Czech Institute of Sociology, the majority of Ukrainian students leave Ukraine in large numbers, because, except of a high level of education, higher education is free in most of these countries, no external independent assessment is required. Students who are able, for example, to study in Czech enter a Czech university, and upon completion of studies, about 40 % plan to stay there. Ukrainians use education as a way to emigrate from the country. An active and promising group of people, who could contribute to positive changes in Ukraine, leaves the country. All this can lead to irreparable loss. Internal migration also causes enormous damage to the university education. Leaving for other areas of activity at least "for one or two years of separation from the scientific and pedagogical environment results in a complete loss of specialist qualifications" [2].

Migration risk is associated with a large outflow of Ukrainian applicants and students to developed countries, in which

a powerful base for higher education and powerful university complexes with a developed infrastructure are created.

Mental and corruption risk is the risk associated with the fact that personnel with low scientific and pedagogical potential monopolize universities. Risks include university monopolization, legal nihilism or denial of the Law.

Such a body as the “National Agency for Higher Education Quality Assurance” (NAHEQA) was created with the new law to overcome corruption in order to monitor and ensure the quality of higher education. One of the first steps of the NAHEQA was the development of regulations on the accreditation of educational programs, the adoption of higher education standards basing on European standards and best practices. One of the ways to eliminate corruption in the accreditation of educational programs is the creation of an independent expert group, which includes two reputable lecturers in the relevant specialty and one reputable student representative.

The described earlier draft law No. 2299 points to the writing of a “motivation letter” by applicants for admission to higher education institutions. Marks will be awarded for such a letter. It is clear that it is possible to evaluate such a motivation letter by subjective criteria, which makes it possible to promote corruption for the Admission Committee.

Epidemiological risk is the risk associated with the spread of a life hazardous virus. The spreading of, for example, COVID-2019 has led to the closure of universities and to the decline of the economy in many countries.

Let us consider the indicators of the risks investigated above and possible solutions to mitigate them.

1. Gerontological risk (x1). The following should be noted among the indicators: the disappearance of the older generation, the appearance of personnel with low scientific and pedagogical potential. One of the possible solutions to reduce this risk is to introduce a testing and certification procedure to identify talented and screen out weak scientists.

2. Information-dynamic risk (x2). The indicators include the failure of the system of the educational process of higher educational institutions to develop information processes, the loss of value of the lecturer himself/herself with regressive motivation for teaching, and the excess of information flow. The list of control problematic questions in the stated electronic educational material or on-line courses that motivate students to open dialogue with the lecturer, limitation of excessed informational flow in networks, will help to mitigate this risk.

The decline in the quality of secondary education (x3) has the following indicators: marks of “ZNO” certificates do not give a full understanding of the quality of knowledge and skills; degradation of basic and complete school education due to the unification of many school subjects, deceleration of the bio-, psycho- and social development of youth, the influence of media education, the participation of school partners for professional orientation of students [9].

3. A decrease in the quality of secondary education is facilitated by a decrease in the minimal score threshold in various subjects when taking an independent assessment, simplification of the substantive tasks contained in it, and the absence of oral exams in many subjects. Insufficient state funding of textbooks has led to the poor quality of many of them.

The mitigation of this risk can be helped by determining the quality standard of secondary education, which will reflect: the necessary levels of knowledge, culture, civil-mindedness. The standard should be aimed at changing the educational program, determining the optimal number of hours for studying topics. For example, a small number of hours in subjects leads to the fact that students do not work out the topic material, and, as a result, quickly forget and do not assimilate it. At the same time, the program of many subjects is overloaded with excess material. It is necessary to introduce a large number of practical tasks used in everyday life and in different spheres of human activity in tasks of various subjects in textbooks and teaching aids for the best motivation. The

number of subjects should also be reduced, enabling students to make choices on the courses they are interested in. The increase in secondary education should also include indirect factors relating to the health of students. It is well known that less than 5 % of students leaving a secondary school can be considered healthy. Most young people continue to study in higher education institutions with subsequent deterioration of health. To restore it, it is necessary to adjust the lifestyle of young people. This can be facilitated, in addition to the proposals discussed, by an increase in motor activity, especially in the fresh air; balanced diet; lack of bad habits; culture enhancement.

4. Sustainable conservation of wave trends of admission of applicants to “prestigious” specialties (x4). Unemployment, reorientation to other specialties, and a decrease in the number of students in other specialties should be noted among risk indicators.

The reduction of this risk can be facilitated by the annual monitoring of one or another specialty in the labor market and the reduction of the number of applicants admitting the “prestigious specialties” at universities. Preparation of related professions will increase the mobility of graduates when finding work in the labor market.

5. The increase in non-profession oriented contingent of applicants in the university system (x5) is characterized by the following indicators: some students study formally, after graduation, students do not work in their specialty.

The mitigation of this risk can be a mandatory condition to work for at least three years in the specialty, the introduction of dual higher education. Such education arose in Germany in the second half of the 20th century. It consists in students’ combining full-time education with work for the employer in accordance with the acquired specialty. This approach allows, on the one hand, mastering professional competencies well, and, on the other hand, obtaining employment after graduation in the specialty. In modern Germany, psychologists work well in schools, the main task of which is the vocational guidance of students with the formation of an orientation toward receiving secondary or higher education, taking into account the requirements of promising tasks of the regional economy. In Ukrainian schools, such reasoned career-oriented work can also be organized by pointing out the positive aspects of the correct student choice.

6. The inconsistency of educational political reforms (x6) is characterized by a temporary indicator related to the preparation of graduates of specialties (on average 10–15 years), the demand for the offered specialties, the prestige of diplomas, the cost of the services provided, and the possibility of employment.

The emergence of an analytical center for the study and correction of educational political reforms beyond the government and maximally equidistant from its possible effects will reduce the risk described above. Creation of public media through citizens’ fundraising with coverage of educational political reforms through the evidence-based argumentation can mitigate this risk.

7. Migration risk (x7) is characterized by the following indicators: an irrevocable outflow of the best specialists, applicants and students with subsequent professional assimilation in foreign societies, low salaries, and reduction of a university lecturer’s status.

The introduction of internationally recognized diplomas in accordance with European and world standards, which do not require confirmation in other countries, may reduce this risk. This also requires an appropriate international level quality training of specialists.

Attraction of foreign students, the exchange of students, masters and lecturers between universities, their studying abroad, training foreign students through developed university programs for studying specialties and languages, courses, internships and so on can mitigate migration risk.

8. Mental corruption risk (x8). Indicators: the emergence of personnel with low scientific and pedagogical potential, university monopolization, legal nihilism or denial of the Law.

The reduction of this risk, for example, for transparency defense of dissertations, can be facilitated by the creation of a center in which temporary special professions will be randomly assigned from the ratings of scientists of various specialties. The center's objective can also involve the analysis and forecasting of the consequences of unreasoned innovations in the field of education and the publication of research results in mass media independent of state influence.

9. Epidemiological risk (x9). Indicators: restrictive measures to stay at universities, quarantine, emergency situation, state of emergency, closure of state borders, prohibition of conferences and other events.

This risk can be reduced by restrictive measures during training, transfer to distance studying, videoconferences, video lectures, and so on.

Conclusions. A successful university education management strategy is to respond timely to changing environmental conditions, to the emergence of risks. For strategic management in the development of university education in Ukraine, it is necessary to evaluate periodically the most priority risks for a given time and in the future by features (scientific and pedagogical, administrative staff; students and other subjects of education; economic, social fallout; political) and identify the most significant indicators of each of these risks. Risk management in the strategic vector of the development of university education consists in timely identification and forecasting of risks, assessment along with their indicators by features and significance; choosing effective methods to eliminate or mitigate risks; control and implementation of the results. The considered features and the risks structured by indicators, the strategic management model, possible solutions to mitigate the risks will help to predict the development of the university, university education in Ukraine as a whole, help experts evaluate the ranking of universities (the degree of risk elimination and mitigation may be one of the main criteria for evaluating the university's activities, its structural divisions, leaders, scientific and pedagogical staff), to give a quantitative and qualitative risk assessment, choose the best ways and methods for risk response by scientists, the Department of Higher Education of the Ministry of Education, to work out in detail the measures to reduce or eliminate risks by leadership and executors, to organize a permanent monitoring of the identified risks and monitoring of the implementation of measures to manage them, choose an appropriate optimal risk management option.

The prospect of further development of this area is associated with the development of strategic risk management of university education abroad.

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Стратегічне управління ризиками в розвитку університетської освіти в Україні

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Мета. Проаналізувати ризики в розвитку університетської освіти в Україні, представити модель стратегічного управління ризиками.

Методика. Автори використовували методи:

- наукового узагальнення для обґрунтування особливостей актуальних ризиків, розвитку університетської освіти в Україні;
- логічний метод для формулювання висновків, показників ризиків;
- математичне моделювання у створенні лінійної (статичної та динамічної) моделей.

Результати. Визначені та обґрунтовані ризики в розвитку університетської освіти в Україні. Запропонована математична модель стратегічного управління ризиками. Автори розробили рекомендації ослаблення ризиків з урахуванням їх значущості для університетів на сьогодні й на майбутнє.

Наукова новизна. Проаналізовані актуальні ризики в розвитку університетської освіти в Україні, запропоновані наукові ідеї можливих рішень щодо їх ослаблення, представлена модель стратегічного управління ризиками на найближчий час і на перспективу.

Практична значимість. Практичне використання математичної моделі стратегічного управління ризиками передбачає алгоритм дій щодо їх зменшення або усунення. Результати дослідження проблеми можуть бути корисні керівництву ЗВО, експертам з оцінки рейтингу ЗВО, Департаменту вищої освіти Міністерства освіти України, вченим при вивченні тенденцій і ризиків. Ступінь усунення та ослаблення ризиків може бути одним з основних критеріїв оцінки діяльності університету, його структурних підрозділів, керівників, науково-педагогічного персоналу.

Ключові слова: стратегія, управління, ризик, математична модель, університетська освіта

Стратегическое управление рисками в развитии университетского образования в Украине

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Цель. Проанализировать риски в развитии университетского образования в Украине, представить модель стратегического управления рисками.

Методика. Авторы использовали методы:

- научного обобщения для обоснования особенностей актуальных рисков, развития университетского образования в Украине;

- логический метод позволил авторам сформулировать выводы, признаки и показатели рисков;

- метод моделирования позволил представить управление рисками в виде структурной модели.

Результаты. Определены и обоснованы риски в развитии университетского образования в Украине. Предложена математическая модель стратегического управления рисками. Авторы разработали рекомендации ослабления рисков с учетом их значимости для университетов в настоящем времени и на будущее.

Научная новизна. Проанализированы актуальные риски в развитии университетского образования в Украине, предложены научные идеи возможных решений по их ослаблению, представлена модель стратегического управления рисками на ближайшее время и в перспективе.

Практическая значимость. Практическое внедрение математической модели стратегического управления рисками предусматривает алгоритм действий по их уменьшению или устранению. Результаты исследования рассмотренной проблемы могут быть полезны руководству ВУЗов, экспертам по оценке рейтинга ВУЗов, Департаменту высшего образования МОН Украины, ученым при изучении тенденций и рисков. Степень устранения и ослабления рисков может быть одним из основных критериев оценки деятельности университета, его структурных подразделений, руководителей, научно-педагогического персонала.

Ключевые слова: стратегия, управление, риск, математическая модель, университетское образование

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