Risk in Implementing New Electronic Management Systems at Universities

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ABSTRACT

Rapid development of using information technology in *higher education* contributes not only into its efficiency but also may cause a variety of risks affecting implementation of some other educational process aspects. Understanding the significance of the risks and their subsequent study and assessment allows for timely adjustments in implementation of certain informational and educational technologies in the educational process. The paper focuses on the issues related to identification of the major risks while introducing and implementing educational innovations, and those related to introduction of the *learning management system* (LMS) in higher education institutions, their impact assessment and influence on the efficiency throughout the entire educational process. The results of the study have been summarized using risk mapping and sensitivity analysis methods. These methods allowed us to visualize the level of each risk distinguished in the study according to the degree of its influence on the educational process and probability of its occurrence. The study was based on the survey findings and students' interviews and aimed to identify whether they understand and realize the difficulties and complexities in the procedure of innovative technologies implementation by their university. The authors have developed a list of risks occurring while introducing and implementing innovations in the educational process which in their turn will reflect the peculiarities of the higher education institution using modern learning techniques. Moreover, the paper discusses the risk sensitivity study results. They are presented as an expert appraisal of risks related to their influence on the resultant as integrated assessment, i.e. the *Wheel Model* of *risk* management. In the course of the study it has been found that, despite the difficulties of innovation implementation, the innovative programs having been introduced improve the educational process and ensure appropriate quality of human capital, or workforce. Reasonable conclusions from the experience of the state-of the art innovation introduction into university teaching-learning process confirm its practical significance, its ability to encourage university students and increase their participation and independence in learning, thus contributing to development of their skills that meet the requirements of an economist position and in future will help them be successfully engaged into innovation economics. These students' skills and competencies meet the requirements of innovative processes in the economy, despite the fact that the process involves certain risks. The paper materials may be of practical value to professionals involved in the development and implementation of innovative educational technologies at universities.

Keywords: innovation, risks, educational technology, higher education

Contribution of this paper to the literature

- The authors offer a list of questions to identify possible deterioration in the quality of education caused by partial turn down in introduction of new methods into educational process.
- The paper presents risk assessment of education quality deterioration as it is reflected and understood by university students. The assessment is based on indicators of risk emergency probability and their impact; it is used for further development of risk maps that had been developed by the authors earlier.
- Risks were identified, the sensitivity analysis of risks was carried out, influence determinants leading to either increase or decrease of the risks were established.
- With the aim of deepening the study and ensuring its clarity the Wheel Model of risks has been built to provide a comprehensive risk assessment in a higher educational institution on the basis of considering boundaries for risk indicator influence.

INTRODUCTION

The Relevance of the Research

The specific conditions of the modern information economy (knowledge economy) are characterized by new patterns of innovations development *and* technology upgrading at the global level especially those related to education and training. Their study is able to ensure competitive training of specialists. The Republic of Tatarstan adopted Social and Economic Development Strategy of the Republic for the period up to 2030 (Development Strategy for socio-economic development of the Republic of Tatarstan for the period up to 2030, 2015) where special importance is given to the role of human capital which is considered as one of the major competitive advantages in Russia; and its optimization has been always considered as a priority for the country. The current region investment policy is aimed at the development of not only industrial projects (Kvon & Vaks, 2017), but also projects related to human capital formation and development.

Higher educational institutions training highly qualified specialists are of great significance as their training is considered to be a tool for developing highly skilled and motivated personnel (Galushkin, 2015). In addition, the authors have examined student as a future subject of professional activity (Khasanova et al., 2015; Shushara & Khuziakhmetov, 2017; Khrulyova & Sakhieva, 2017) and indicated that quantitative and qualitative changes of human capital are able to make a significant influence on labour market and its participants. The need to increase competitiveness of human capital has been discussed in the works of Vaks (2015, 2016).

Introduction and implementation of innovative technologies in the educational process may be connected with risks. Historically, the concept of risk was defined as person's awareness of some probable hazardous event or phenomenon in the present or future associated (or not associated) with his actions. Educational environment, thus, is a fairly specific community characterized by its own particular risks (Levina et al., 2017; Mukhametzyanova, 2016) and they require special consideration. In connection with the foregoing, we should add that the relevance of the research is that it attempts through certain inner risks analysis and assessment provide insight into innovative technologies introduction in higher educational system of Russia. Decrease in negative effect of these risks provides the increase in competitiveness of future labor market participants.

Purpose and Objectives of the Study

The aim of the study is to analyze the impact of innovative educational technology application and the occurring risks in the process of training competitive professionals through implementing innovative technologies into educational activities, in particular, the use of electronic training management system at universities.

The following objectives of the study were defined:

1. Assessment of the implementation impact of a virtual learning environment and Blackboard Learn course management system on the educational process from the point of view of students.
2. The study and characterization of the emerging risk impact on the quality of educational activities while using Blackboard Learn.
3. Conducting sensitivity analysis and designing risk maps to generalize the results and outcomes of the study carried out to assess risks perceived by students.

The analysis is based on surveys of third- and fourth-year students majoring in Economics, full-time study, and processing of the obtained results.

LITERATURE REVIEW

Innovative transformation of socio-economic processes requires appropriate changes to be made both in production and in educational spheres. The concept involving active incorporation of the integrated approach into engineering education is currently under way. It implies innovative principles of designing syllabus, close to true production conditions related to material support and equipment of learning, as well as a special approach to teaching, i.e. creating an environment to support e-learning (Kvon et al., 2017; Kong et al., 2017).

The study of risks in education and, first and foremost, the risks associated with university education quality assurance is considered to be, in our opinion, the most important factor to form a competitive professional actor (participant) in learning process. Moreover, when providing quality learning in professional training, innovative aspects are becoming of great significance and their efficiency analysis should be based on the integrated approach combining both market and public authorities requirements to future participants in labor relations as well as individual requirements of learners and the teaching staff directly involved into the learning process.

Thus, introduction of innovative educational technologies is simultaneously accompanied by occurrence of diverse external and internal risks. The importance of risk reduction in the education sector has been recognized and considered on the government level. Thus, among other key issues in the innovation economy both at the level of the Republic of Tatarstan and the Russian Federation the risk of skilled human resource shortage holds a unique position (Development Strategy for socio-economic development of the Republic of Tatarstan for the period up to 2030, 2015). That means that the need to reduce risks by increasing the degree of innovations in the economy of the country and its educational sector in order to create a competitive human capital has been officially stated.

Innovation drives economic growth. Mukhametzyanova (2016) has identified the following risks according to their decreasing importance:

— labor force participants with no required theoretical knowledge and practical experience in its application to solve the tasks set ;

— low degree of readiness to participate fully in the labour relations and lack of adequate assessment of personal and professionally important qualities;

— lack of competence in the field of teamwork ability.

In our further research we conducted a questionnaire survey to clarify how risks are understood by students. The results was presented in our paper. It should be noted that despite the undeniable advantages of electronic management system in education its implementation, like any other innovation, evoked teaching staff's resistance. According to data available (Khasanova et al., 2017; Cao et al., 2017), there have been seven types of risks reflecting teachers' and students' views on the problems of innovative technique implementation. Moreover, the authors conducted a SWOT analysis, i.e. scanned the internal and external environment in educational institutions which were implementing new educational techniques (Khasanova et al., 2017).

Aspects of insufficient teamwork competencies of educational process actors were presented by Mukhametzyanova et al. (2016) paper. In connection with the above mentioned we should point out the need for educational process actors to form a socio-psychological competence through their professional activity, which is also reflected in the work of the above mentioned author (Muhametzyanova et al., 2016). The research data were used to continue the work in this direction by Ibatullova et al. (2015). The author believes that any implementation of a new approach in the educational process should take into account the peculiarities of students' adaptation to it, thus ensuring interrelation of social and psychological adaptation.

Methodical approaches to create a system for monitoring risks arising from any organization activities regardless of their scope, qualitative and quantitative risk assessments, developing anti-risk events are presented in the work of Rykhtikova (2009).

The concept of mandatory implementation of the educational innovations into teaching process was developed by Dürkheim (1995) who extended his research and presented a model of innovative development of an educational system and due to insufficient technological support focused on methodological factors, though in fact, suggested a pretty innovative approach to organize the student community.

Issues of innovation networking and their impact on social education in educational framework were considered in Shisharina (2016). The work deals with aspects of socialization and educational innovation influence on mobility of a modern economic system.

As it was mentioned above, we consider educational risk study and, first of all, consider risks associated with providing quality higher education (Khasanova et al., 2017; Mukhametzyanova, 2016; Kvon & Vaks, 2017) as the most important factor to form competitive professionals. In our opinion, innovative aspects in achieving professional actors' quality training is now gaining in significance and its efficiency analysis should be based on the integrated approach combining the market and public authority requirements to future participants in

professional labor relations and personal requirements expressed by students and teachers as certain direct participants in the educational process.

Influence of educational techniques on the competitiveness of human capital was discussed in the works of Vaks (2016) with special attention paid to the need to introduce innovative educational technologies to ensure functional and comprehensive educational process in the framework of inclusive education.

Khasanova et al. (2015) discussed the economic aspects of educational technologies implementation through formation of an attitude to the personality of a student, the need of human capital to strive for self-development, study by increasing the activity and independence, as well as through formation of student's personal qualities such as initiative and responsibility. Full and robust implementation of this approach requires innovative solutions available in the education system and in particular those related to their implementation. The investment development of the region is considered in aggregate by Kvon & Vaks (2017) taking into account both production and social aspects.

According to Deb (2014) information technology provides numerous new opportunities; and what is special, in the educational sphere they allow to work with a large number of education providers making little account of territorial remoteness because on-line tutorials and video-conferences allow to organize learning with virtual environments, Interactive Multimedia and virtual reality.

Specifics of side effects of information technologies use while implementing them in educational process are considered in the work of Spitzer (2014) that basically evaluates the features of primary and secondary education; however, considers that in higher education it addresses multi-task implementation issues in training technical professionals and concludes that it leads to problems in maintaining the focus to achieve the educational aim. Therefore, we may say that information technology in education is fraught with significant risks.

Hidden ambivalent nature of the use of information technologies in education has been explored by Shamshina & Koryuhina (2015). They considered the issues of education continuity, particularly when using informal learning technologies such as open distance education. Information technology is an essential condition to ensure this openness; however, if there is no transparency in management they may disseminate harmful or incorrect information.

At the same time, information technologies are being actively introduced at universities. Thus, at the University of Wisconsin–Green Bay (also known as UW–Green Bay or UWGB) 2014 - 2017 Information Technology Strategic Plan (Information Technology Strategic Plan 2014-2017, 2013) has been developed to focus on the use of information technology and create competitive learning advantages at the University. Hence, we can see that despite the presence of side effects, the system of higher education considers it necessary to use information technology but takes into account emerging risks and tries to reduce their consequences.

The importance of information technology in educational projects is also presented in the work of Cândido De Oliveira et al. (2014). He exposed results and outcomes of the study that made it possible to assess the impact of risks arising in the implementation of this sort of projects. The study was conducted on the basis of a survey conducted by experts in this field. The article allowed the authors to identify and prepare the mismatch weights of impacts related to individual types of risks caused by experts' special understanding of the existing problems. The dissonance discussed is caused by significant role of technological resources in contrast to theoretical aspects of risk planning.

The work of Granito & Chernobilsky (2012) considered important aspects of the impact of education support technical means on motivation and aspiration of students to learn new information which was accomplished through implementation of a long-term project. Special attention is paid to the preservation of information. The study was conducted on the basis of repeated students' testing and the results were converted into numerical score to estimate the information retention degree using the Likert scale.

Mansell (1999) is internationally known for her work on the social, economic, and political issues arising from new information and communication technologies. As early as in 1999 she wrote about importance of including all countries, particularly developing ones, in the modern information society (Mansell, 1999). There she focused on the technical component of creating the network infrastructure on the level of organizations and countries, as well as the importance of proper assessment of technological features and implementation strategies, presented basic principles for actions and stages of implementation. Her publications include numerous articles on information society policies by influencing policy makers to acknowledge the complexity of change in the digital world and the legitimate claims of stakeholders, including citizens (Mansell & Tremblay, 2013). Many of her recommendations were repeated in UNESCO's recommendations for the United Nations review of the Millennium Goals. The report was approved for publication by UNESCO and world distribution in Arabic, Chinese, English, French, Portuguese, Spanish and Russian in 2014, in time to influence the final deliberations on the Millennium Goals that bear on how policies concerned with digital technologies can contribute to inclusive development.

Security issues that need to be followed regardless of their area of application have been considered in the work Nikolić & Ružić-Dimitrijević (2009). The paper discusses the risks and assesses the threats arising because e-stored information may be easily altered or lost. Moreover, the article presents a universal algorithm for quantitative risk assessment that allows comparing the obtained results and taking measures to prevent the risks.

MATERIALS AND METHODS

The leading method to study the problem is a quantitative method of risk assessment based on the sensitivity analysis; it is the calculation methods which uses indicators of probability and risk impact. To ensure transparency of the methods used we offer mapping and designing the risk *wheel*. These methods allow us to provide accuracy of the calculations made.

Basis for the Pilot Study

The research is based on the results of the pilot experiment conducted at the Institute of Economics and Social Technologies which is a part of Kazan National Research Technical University named after A.N. Tupolev (Kazan, Russia). The survey involved 255 third-and fourth-year students majoring in Economics. This work is the final stage in the research conducted by the authors in their attempts to assess results of introduction and implementation of information educational technologies in higher education system. Part of the students had already participated in earlier surveys on the topic.

Research Methodology

In this work the following theoretical and empirical methods have been used:

1) Theoretical analysis of scientific, pedagogical and methodological literature on the topic of research related to educational risks.

2) Questionnaire survey to obtain initial original information on the problem based on interviews with a pre-designed questionnaire and observations of students during this process.

3) Quantitative risk assessment based on the risks probability indicators that influence the way electronic technologies are being implemented in the educational system, and their impact.

4) Expert evaluation method based on the sensitivity analysis to identify the most important types of risks under the conditions of specific determinants changing.

5) Mapping and Wheeling as methods to ensure visibility of the study and generalize integrated risk indicator estimates using criteria selected by the authors.

Steps in Conducting the Experiment

A combination of interdependent steps has been used to provide structural content of the studies, ensure their meeting the goals and achieving the desired result.

In the first phase of the study a set of preparatory operations was carried out which involved compiling a list of questions to be included in the survey questionnaire. Further, the first step was continued with procedure of interviewing students using the developed list of questions, and finally, the results of the survey were compiled and presented in the form appropriate for processing.

The second step dealt with selection of available research methods which could lead to achievement of the goals set. Processing, synthesis and preliminary analysis of the data were carried out in accordance with theoretical methods and other methods available. Results evaluation of this process was carried out in terms of the best empirical research method to achieve the goal.

The third step was the phase when the priority methods of empirical research were defined, risk maps and the *wheel* were designed, as well as analysis and results assessment were made, and, finally, conclusions made allowing us to appraise the level of objective achievement.

RESULTS

To identify risks we studied how students understand risks of implementing electronic management in education. With this purpose we proposed a questionnaire that considered several types of risk.

The survey involved 255 students studying economics.

Two indicators were proposed to be assessed:

Table 1. Processing of students' questionnaires on risk impact and its assessment

Risks	Subjective risk assessment by student	Probability of risk occurrence	Risk impact on education
R1 - the risk of employee leaving *and* no timely employee refresh engagement resulting in aging of the personnel and determining unwillingness of employees to study and apply advanced techniques in their educational process; this in its turn hinders innovations of the university.	High	150	114
	Medium	57	87
	Low	48	45
	No risk	0	9
	Total	255	255
R2 - risk of reducing students' potential opportunities to master new knowledge as a result of insufficient training at school, and constraining the ability of students to understand and apply innovative technologies implemented by the university.	High	126	141
	Medium	63	84
	Low	63	24
	No risk	3	6
	Total	255	255
R3 - the risk of deterioration of the reputation and prestige of the university in specific areas of study leading to development and acceleration of negative changes in the quality of the students' abilities and skills, as well as reduction in quantity of those students who are interested in obtaining educational services.	High	48	141
	Medium	78	81
	Low	108	30
	No risk	21	3
	Total	255	255
R 4 - the risk of decrease of the teaching staff interest related to the quality of rendered educational services apparent in no commitment to implementation of innovations, insufficient for fair evaluation of teachers ' work	High	69	162
	Medium	123	63
	Low	45	27
	No risk	18	3
	Total	255	255
R5 - risk associated with education cost rising due to either state budget funding limits or internal reasons, but causing an ambivalent result: on the one hand, students have an additional incentive to critically assess the level of learning competencies quality and, on the other hand, the reduction of finance limits affects the ability of the university to develop and implement innovations.	High	186	165
	Medium	60	66
	Low	6	18
	No risk	3	6
	Total	255	255
R 6 – risk of stress factor increase caused by diversification of the tasks that the teaching staff faces after innovative educational technologies have been implemented; they involve combination of functions i.e. teaching, supervising and information services and, partially, engineering services to work with information technology that leads to significant increase of transferring the load and responsibility on teachers as they have to complete a course on innovative technologies, appreciating their potential and peculiarities in application	High	147	117
	Medium	57	95
	Low	42	43
	No risk	9	0
	Total	255	255
R 7 - subjective assessment risk related to discrepancy in volumes and complexity of implementing educational innovations and scheme of payment adopted in the university; this leads to loss of motivation in learning how to use new technologies because of no extra duty payment	High	150	84
	Medium	57	135
	Low	39	30
	No risk	9	6
	Total	255	255

- the probability of each risk occurrence;
- the degree of risk impact on the effectiveness of the educational process (while introducing and implementing e-learning resources).

Indicators (the probability of a risk occurring and the degree of its influence) were measured and broken into three positions:

- high
- medium;
- low.

It should be noted that some students didn't consider negative factors included in the questionnaire as risky ones (maybe didn't know what to answer, or were not sure). Therefore, we had to introduce the fourth position: no risk.

The list of risks and the way they were distributed in students' responses on risk assessment, and their impact are presented in **Table 1**.

Table 2. The coordinates to build risk maps

Risks	Risk probability	Risk impact degree
R1 - the risk of employee leaving *and their* no timely employee refresh engagement	0.28	2.33
R 2 - risk of reducing students' potential opportunities to master new knowledge	0.22	3.08
R 3 - the risk of deterioration of the reputation and prestige of the university in specific areas	0.10	3.01
R 4 - the risk of teaching staff interest decrease in terms of the quality of rendered educational services	0.16	3.60
R 5 - risk associated with education cost rising	0.43	3.78
R 6 - risk of stress factor increase caused by diversification of the tasks that the teaching staff faces	0.28	2.43
R 7 - subjective assessment risk related to discrepancy in volumes and complexity	0.29	2.35

As we have reported earlier, the data obtained allowed us to build a risk map (Khasanova et al., 2017). However, in this paper, the authors propose to consider and describe the algorithm for constructing maps and adjust the existing results of studies conducted.

Questionnaire responds and survey were studied in the following way. To build a map we needed the formula and coordinates of the above-mentioned parameters (probability and impact of risks). For this we used the weighted arithmetic mean formula (1) applied to our data from **Table 1**.

$$\bar{x} = \frac{\sum xf}{\sum f} \tag{1}$$

Where

x is the index (or indicator) under study i.e. probability of risk occurrence and the degree of its influence;

f stands for weight index.

In this work weight indices have been calculated for average value range for parameters (probability and impact) which the authors (subjectively) attributed to high, medium and low, respectively. We got coordinates calculated for plotting and presented them in **Table 2**. To avoid repetition of the risk features we used their abridged descriptions.

To clarify the results obtained we should explain that the backbone here is in distinguishing and allocation of zones which would be a kind of index for their further management (analysis, evaluation and development of anti-risk measures). The zones provide visibility in grouping the risks. Zones have been distinguished as three zones with defined borders: green (acceptable risks and do not cause any harm or threats for the organization); yellow (risks may cause harm and their presence in the educational process needs to be discussed) and red (risks pose a real threat that could disrupt educational activities). Each zone has certain boundaries that need to be identified. We have chosen the following boundaries:

Green zone probability values are in the range from 0 to 0.25, yellow - from 0.26 to 0.5, red - above 0.51.

Similarly, for risk influence degree index the following boundaries were set:

Green zone: 0 - 3.5;

Yellow zone: 3.51 - 5;

Red zone: more than 5.1.

The updated risk map (compared to the previous one by Kasanova (Khasanova, 2017, Bulletin No. 3) is of the following type (**Figure 1**).

Looking at the map we can see that the green zone covers the following risks:

R 2 - risk of reducing students' potential opportunities to master new knowledge;

R 3 - the risk of deterioration of the reputation and prestige of the University in specific areas.

The yellow zone comprises all other risks (R1, R 4 through R 7).

The study has demonstrated that there are no risks in the red zone which is good and means that there are no threats to the university which could disrupt educational activities and implementation of new technologies
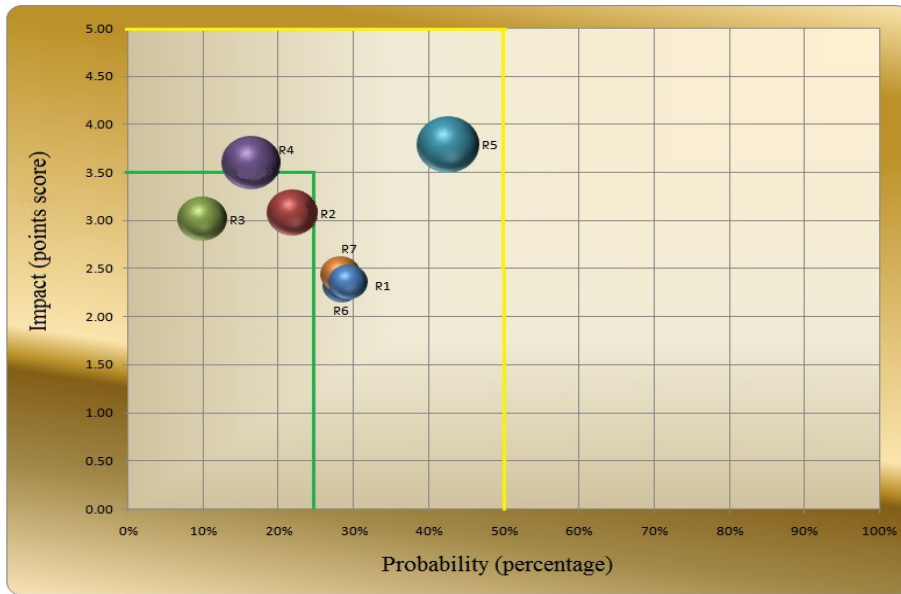
Figure 1. The risk map for university innovation implementation

Table 3. Risks sensitivity analysis results

Risks	Basic version (from Table 2)		Version 1		Version 2	
	Probability	Influence	Probability	Influence	Probability	Influence
R 1	0.28	2.33	0.33	2.57	0.35	2.81
R 2	0.22	3.08	0.26	3.35	0.28	3.62
R 3	0.10	3.01	0.14	3.28	0.15	3.54
R 4	0.16	3.60	0.21	3.87	0.24	4.14
P5	0.43	3.78	0.49	4.07	0.52	4.35
R 6	0.28	2.43	0.33	2.69	0.35	2.95
R 7	0.29	2.35	0.34	2.70	0.36	3.05

Developing the study further we proved the sensitivity analysis to be important. The analysis necessity may be explained by the following idea. As mentioned above, risk assessment and the attitude to its relevance (in terms of possible negative consequences) typically are subjective. It is well known from the theory of risk management that the risk attitudes of all subjects can be attributed to two categories: risk- neutral persons (with indifferent attitude toward risk), i.e. never exaggerating the hazardous consequences; and those persons who exaggerate negative consequences of risks.

In this regard, the authors consider it to be interesting and helpful to test the quantitative characteristics of risks, by changing the boundaries of "high," "medium" and "low" concepts depending on the attitudes to risk consequences. We have calculated two versions for risk probability change, or variation, and its influence degree.

Table 3 presents the results of sensitivity analysis for risk assessment indices when the version for the risk map is called the basis one and the alternatives are numbered as versions 1 and 2.

According to the results obtained we build the *Risk Wheel*; graphs for the three options (basic version and two additional) are presented separately for each index. The distribution of probability indices is shown in **Figure 2**.

According to **Figure 2** the most sensitive to boundary variations for option (version) 2 are:

R3 - the risk of deterioration of the reputation and prestige of the university in specific areas of study (coefficient of variation is 1.51); and

R 4 - the risk of decrease teaching staff interest regarding the quality of rendered educational services (average of 1.47), though initially the probability of these risks was the lowest.
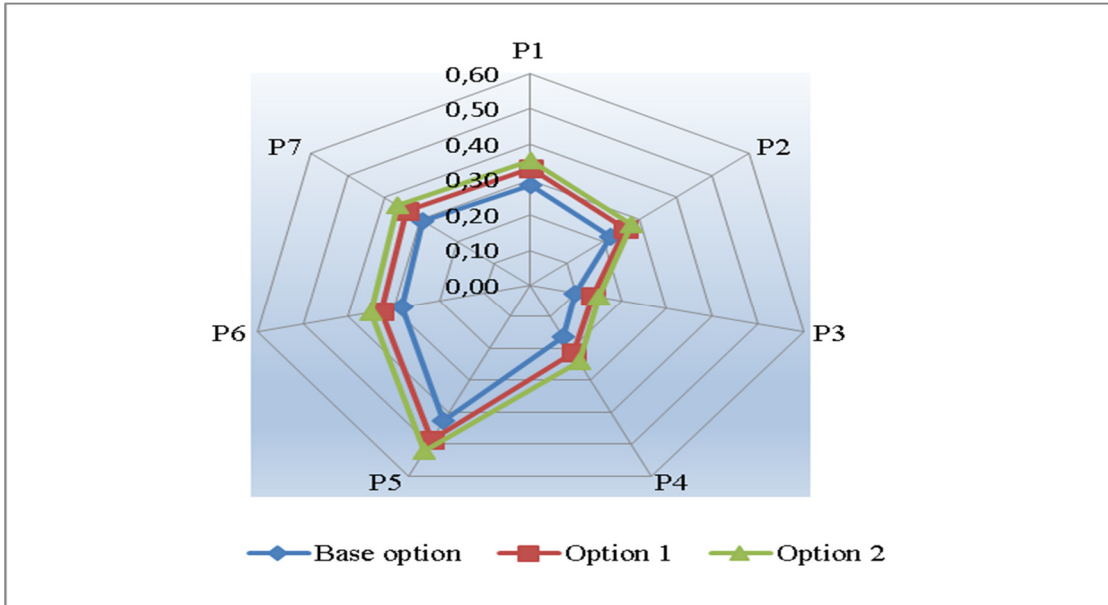
Figure 2. Risk Wheel for risk occurrence probability
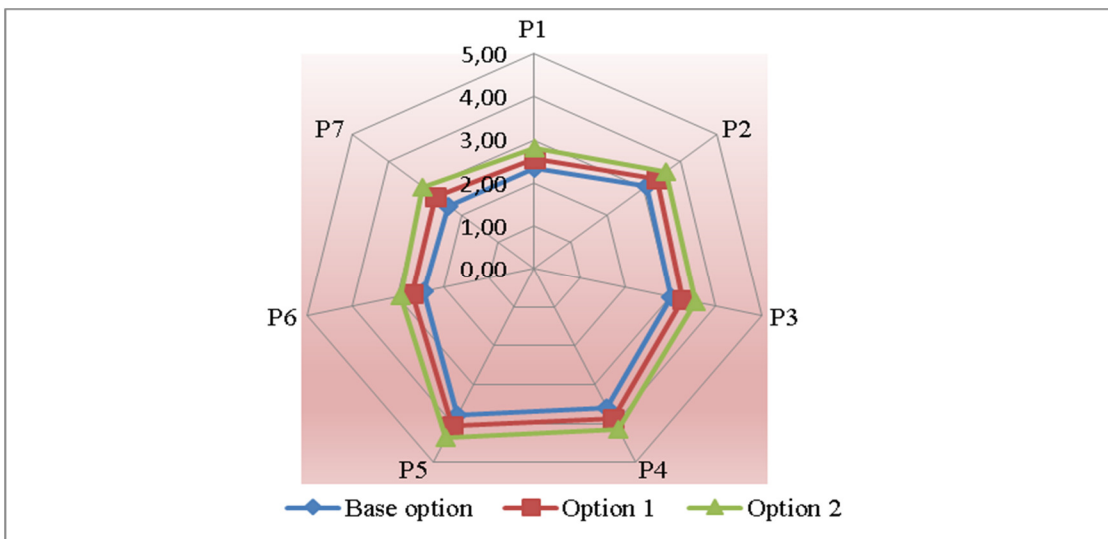

Figure 3. Risk Wheel for estimating the degree of risk influence

Similarly is the *Risk Wheel* for considering the degree of risk influence was also designed (**Figure 3**).

The sensitivity of this indicator is much lower. Most sensitive to changes is Risk 7 - subjective assessment of risks related to their discrepancy in volumes and complexity, coefficient of variation is 1.3.

As for the risks, the most critical appeared to be Risk 5 (the risk of education cost rising).

Other risks demonstrated different pictures: for example, Risks 2, 3 and 4 are lower in their occurrence indicator compared to the rest risks, but the extent of their exposure is higher.

On the whole, the risks associated with electronic technology introduction discussed here cannot cause substantial harm to the educational process.

DISCUSSIONS

Consideration of the issues of *implementing* and evaluating *educational* technology initiatives is a very significant aspect in transforming economic system. So, under modern conditions it is particularly important to examine the main risks arising in the process of implementation, as well as distinguish and highlight problematic aspects that researchers and education process participants are facing. It is a common knowledge that close connection between theory and practice is the specific feature and requirement of educational process in practice.

This relationship remains relevant for a long time; it has always been of interest and recognized by certain representatives of the scientific community. In the early 20th century the issue was discussed by Weber (2016). In the process of theoretical comprehension of social processes of their time the authors believe it necessary to pay attention to education as the basis of society and determine its specific characteristics. That is why the authors faced challenges in their study, *encountered* certain difficulties in the course of conducting the experiment.

The research methodology development and calculation of indices (indicators) boundaries made the authors think over some difficulties and challenges. One of them was caused by the fact that when studying other researchers' papers we encountered controversial opinions. This phenomenon included numerous positive views concerning information technology introduction into education, or learning process. This aspect was looked upon as not very desirable; there were many viewpoints stating that it might increase negative consequences in effectiveness of education. In this regard, the authors have had problems in comparing their experiment values with those received by other researchers. The authors are absolutely sure that implementation of information technologies for successful higher education is imperative, though should be based on true understanding, analysis and evaluation of the risks that may emerge in the process.

Our future work on the issue will involve consideration of security management issues that have not been discussed in this paper. Risk for information security involves considering the types of loss (risk category) and how that loss might occur (risk factor). Data trespass is another issue. IT security involves protecting information stored electronically and the industry needs to come up with solutions to avoid any problems with information management and security. This paper have dealt with students' opinions on technology innovations implementation not considering the above mentioned aspects as they were not our aims in this research.

Difficulties in Transition to a New Paradigm

We'd like to add that experiment results might have different values because of the lack of complete fairness and credibility on the part of students. It was observed that some of the students when completing the survey questionnaire adjusted their responses in accordance with their ideas about the expectations of its authors. For these reasons, we think of Masters as suitable responsible actors to be involved in carrying out the questionnaire interview but not teachers.

We also believe it is appropriate under conditions of our country to consider the issues of developing anti-risk measures to provide success in quality professional training on the basis of integrated approach, combining market and public authorities' requirements, as well as taking into account personal attitudes and demands of direct participants of the educational process, i.e. students and teachers.

CONCLUSION

Economic changes and new innovative facilities put forward the necessity to think over new requirements to university graduates' skills and competencies. We can't have a strong economy without a strong university sector. A competitive economist training is impossible without the use of modern teaching facilities in the process of training. In this regard, e-learning in the field of education to control learning outcomes in online and offline modes, obtain analytical reports on achieving the goals, and analyze students' performance is of great importance.

In the course of writing the paper the objectives set have been solved. The first objective was to conduct a survey with students majoring in Economics, full-time 3-d and 4-th- year students, elaborate and process the results obtained. The study attempted to assess students' perceiving level of risks arising in the course of their educational activities under the conditions of electronic support tools implementation in university training.

As the second objective the authors suggested risks encountered under special conditions of higher education; they had to be identified, assessed in terms of their probability and impact. The study proved the positive effect of a virtual learning environment and Blackboard Learn course management system on the entire educational process in the university. Currently, Blackboard Learn helps optimize Kazan National Research Technical University learning management systems i.e. improve implementation services and training to create new learning experiences.

The third problem discussion showed that when Kazan university students gave their appraisal of LMS Blackboard Learn use they confirmed its importance and usability in the educational process, and that was later evidenced by results of questionnaires survey. Risk mapping to reflect the peculiarities of using modern learning technologies at higher education institutions in the long run brought to the visualization stage of all cumulative results. With the aim of expanding the boundaries of the study a sensitivity analysis was conducted; the sufficiency of made it possible to design the *Risk Wheel* and determine the degree of final response result variations for each risk.

Innovation is always fraught with difficulties; however, the implementation of programs for innovative development with the aim of improving the Russian higher educational system is able to ensure the appropriate quality of human capital, the ability to bring the Russian education system to the global level. Despite the fact that the need for innovative technologies in the modern educational process is not questioned, the issue of full transition of educational process to online learning is controversial because of certain possible risks and dangers.

Summing up, we would like to conclude that state-of-the art innovative tools being intensively introduced in Russian educational process enables the universities with effective support in learning, leads to increase in students' learning incentives and activity, improves their independence, contributes to successful formation of their skills and competencies required to participate in the knowledge economy. Despite the fact that the process contains certain risks it provides practitioners with a smart tool, supporting them in the *innovation* policy-making *process*.

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