ASSESSING MATURITY OF THE RISK MANAGEMENT SYSTEM IN HIGHER EDUCATION INSTITUTIONS

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Abstract: The article aims to seek answers to four research questions, focusing on the specifics, existing practice, available scientific publications on the issue of assessing the maturity of risk management in universities; the possibilities for creating the framework for developing a model adapted to university practice of assessing the risk management maturity. A framework for the development of a similar model is presented, envisaging the implementation of the following activities: identifying the specific features of risk management in universities; identifying risk factors specific to higher education institutions (HEIs); defining the attributes that will underlie the model description; analyzing some existing models for assessing the maturity level; creating a substantive model; adapting the model to the specific conditions; a pilot assessment when using the adapted model.

Keywords: risk, risk management, maturity, maturity assessment, universities.

JEL: M19, I21.

Introduction

Undoubtedly, risk management as a theory, methodology, processes, methods, and practice is developing rapidly and at an increasing pace. Indisputably, risk management in higher education is of

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particular importance for lecturers, students and staff engaged in the higher education system and the society as a whole.

Higher education institutions are making efforts to establish and develop their risk management systems and significant progress has been made in this direction. At the same time, not all universities are running at the same pace, in some greater progress, in others – less progress is observed. That is why the question "where are we?" may be put on the agenda. How far have we come with creating a risk management system at our university? The answer to similar questions is important from a strategic and tactical point of view. In order for a university to be able to plan its future strategically, as well as to anticipate what needs to be done in the short run, governing bodies must be aware of the stage of maturity of the risk management system. Assessing the maturity level can have a number of other beneficial effects related to assessing the effectiveness of risk management activities. This task seems relatively easy at first glance. Experience shows that a number of difficulties may be encountered when conducting a similar analysis. Each university is unique, with a different set of specific risks, with different qualifications of faculty and staff, with a different corporate culture, including the safety and security culture, with different experience in applying risk management methods.

Research methodology

While preparing the present article, the following research questions were formulated:

1. What are the specifics of risk management in a university?
2. What practice exists and what scientific publications are available on the issue of assessing the risk management maturity in organizations?
3. Is it possible to directly apply any of the existing models to the risk management practice in higher education institutions?
4. What procedure and framework for creating risk management maturity assessment model adapted to the practice of a specific university should be developed?

In order to answer the first research question, the author uses his great experience as a lecturer and researcher at several universities. While seeking an answer to the second research question, a bibliographic search of available scientific literature was conducted – monographs and articles on the issues of assessing the maturity of various risk management systems. The identified sources were analyzed and certain conclusions were formulated. The available information provided an opportunity to answer the third and the fourth research questions.

1. Characteristics of risk management in higher education institutions

According to the author, as a result of the conducted research, the most important characteristics of risk management in higher education which can affect the development of a model for assessing the maturity of the risk management system are as follows:

- Universities have a specific subject of activity, limited to training students at different educational-qualification degrees, as well as PhD students and doing research. Each of these activities is carried out through specific processes, necessary resources and other conditions, required knowledge and skills of staff, different risks and different methods of addressing them. In turn, the training of students in different educational-qualification degrees and PhD students also has its specifics, requires different analytical tools and poses different risks.

  Research work is also characterized by its specific character. If risk management related to training is subject to the principles of enterprise risk management, risks associated with research are subject to the principles of project risk management.
- Variuos groups of internal stakeholders with different characteristics are involved in the processes – students, lecturers, administration. A lot of external stakeholders also exist who vary widely. All stakeholder groups are characterized by different risk attitudes, risk tolerance and risk appetite.

- Management style is specific, it is unproductive to apply an authoritarian style. At the same time, the management style is different when managing the processes in the educational process and the research activity. With training there is an objective need for more active operational control, while in scientific activity control is primarily on the degree of achievement of objectives.
- Lack of resources – financial, building stock (in some cases), equipment, materials and others. Although a number of governments over the last 20 years have declared high priority for education, the funds for higher education provided by the state budget are insufficient. This creates financial risks, especially for the educational process. There was a permanent shortage of lecture halls in some universities. With the transition to e-learning in 2020 due to Covid 19, this problem is temporarily not very serious. At the same time, certain universities have redundant buildings at their disposal, the maintenance of which generates additional non-specific risks.
- Usually, internal stakeholders tend to embrace new ideas. They have the necessary capacity to develop new skills and to use previously unknown risk management tools.
- The assessment of university activities is carried out according to a system of criteria, which change periodically. The normative base regulating the system of criteria for assessment and accreditation of higher education institutions changes relatively often. Adjusting to the changed criteria takes a long time and creates additional risks.

2. Risk management system in higher education institutions

The theory and practice of risk management in modern conditions are developing rapidly. There is already some talk not only about identifying, assessing, analyzing, prioritizing and dealing with risks, but also about creating a comprehensive risk management system in an organization.

Over the last years, the theory and practice of management have introduced the approach to comprehensive enterprise risk management, which has replaced the traditional approach to individual risk management. An important point in the above mentioned approach is that risks are analyzed and managed not individually but in their unity within the whole organization. Risks to an organization are viewed as a portfolio of multiple risks, which makes it possible to adopt a holistic approach to their management (Farrell, M. et al., 2014, pp. 628-629). The author of the present article believes that at some point of maturity, universities must also take a similar approach. The system of risk management in a university should include the following:

1. Risk management strategy and policies, and
2. Risk management procecess according to ISO 31000, PMBOK, including:
   - Communication and consultations.
   - Scope, context and criteria.
   - Risk assessment, including risk identification, risk analysis and risk evaluation.
   - Managing risk.
   - Monitoring and review.
   - Recording and reporting.
3. Staff engaged in managing risk with their knowledge, skills and experience.
4. Resources allocated for risk management.
5. Security culture and risk management culture.
6. Regulatory documentation of risk management activities.
7. Documents prepared in relation to the risk management activities.

It is widely accepted that all individuals involved in the risk management process are responsible for it. However, the key role is played by the governing boards and senior administration. (Willson, C. at al., 2010, p. 66).

3. Framework for developing a risk management maturity assessment model in higher education institutions

The framework proposed in the present article for assessing the maturity of risk management in higher education institutions envisages initial identification of its specific features in higher education institutions that may affect the development of a model for assessing the maturity of the risk management system. An overview of these features was already presented in the article. Next, it is necessary to identify the risk factors, specific for HEIs.

A set of risk factors exist common to the entire national economy which form the common risks for each organization, including universities. Examples of similar risks are as follows: fluctuations in macroeconomic indicators, security problems, shortage of qualified staff, cultural differences between market players, frequent changes in the regulatory framework. At the same time, along with the common risk factors for each organization, there are those specific to it which underlie the formation of company-specific risks. Implementing this step is important and requires collecting the opinions of many lecturers and researchers from the respective university.

The next step should be to define the attributes underlying the model description. The following attributes that should be the basis of assessing the risk management maturity level in an organization are described in literature – culture, attitudes and experience, management perspective, process, identification, analysis and response, application and practice, project management (Abdulrahman, RS, et al., 2019, p. 22). Other attributes can be: process management and risk appetite management.

Then, the information on existing maturity level assessment models described in scientific literature should be analyzed. A great number of maturity assessment models are known in theory and practice. Domenic Antonucci, for example, analyzes and compares the characteristics of 77 maturity models (Antonucci, D., 2016, pp. 66-133). Another source compares the levels of maturity applied in six models (Abdulrahman, R. S., et al., 2019, p. 23). These models offer the following levels: naive or Ad-

hoc; initial, repeatable or novice; defined, managed or normalized; optimized.

Mark Farrell and Ronan Gallagher summarize the views expressed in several publications and propose **five levels of maturity assessment** that are somewhat consistent with those mentioned above (Farrell, M. et al., 2014, p. 635). The levels offered in the publication are as follows:

1. Ad hoc (primitive management, risk management depends on the individual actions of particular individuals).

2. Initial level (risk management is loose, with weak integration and aggregation of risks, lack of discipline, definitions of risks vary).

3. Repeatable (a risk assessment framework exists, the board of directors receive a review of risks, risk management approaches are established and repeatable).

4. Managed (enterprise-wide risk management activities such as monitoring, measuring and reporting are integrated and harmonized with established measures and controls, risk procedures are discussed and fully understood within the organization, risk management principles are fully integrated into the management process).

5. Leadership (discussions on risk such as long-term planning, capital allocation and decision-making are placed at a strategic level, risk appetite and risk tolerance are clearly understood, there are warning signals to ensure that the board of directors and senior management will be warned when risk thresholds are reached).

A similar approach is used by Diogo Proenca, Ricardo Vieira, Jose Borbinha. They offer a model that also includes the following levels:

- level 0 – non-existent risk management;
- level 1 – initial risk management;
- level 2 – managed risk management;
- level 3 – defined risk management;
- level 4 – quantitative risk management;
- level 5 – optimizing risk management (Proenca, D., et al., 2017, p. 8).

Zhao, Hwang and Low summarize the information from 16 models, identifying the following criteria by which the models determine the level of maturity:

1. Commitment of the board and senior management;
2. Owner's risk management system in an enterprise;
3. Risk appetite and tolerance;
4. Risk-aware culture;
5. Availability of sufficient resources;
6. Identifying, analyzing and responding to risk;
7. Iterative and dynamic steps of the risk management process in an enterprise;
8. Using risks as opportunities;
9. Risk communication;
10. Common risk language;
11. Risk management information system;
12. Training programmes;
13. Formalized key risk indicators;
14. Integrating risk management processes in an enterprise in its business processes;
15. Setting goals;
16. Monitoring, reviewing and improving the risk management framework in the enterprise (Zhao, X. et al., 2013, p. 1181).

A number of good practices that relate to each of the criteria have been identified and statistically evaluated in the same source. Assessing the extent to which these good practices are applied can be a solid basis for determining the maturity level of a particular organization.

Xie and Yanjun have developed a system for assessing the risk associated with human resources in universities (Xie, L. et al. 2015, p. 13.3). They use a very up-to-date and rapidly gaining greater popularity tool – neural networks. The basis of their assessment is a neural network model developed by them, built from a set of indices grouped into the following groups: risk planning, recruitment risk, staff training risk, performance evaluation risk, employee risk management. The model was replicated by using empirical information collected by five universities. The output variable of the model is used to estimate the level of risk associated with the respective index. The values of the output variable can be 1 – normal level of risk, 2 – attention, 3 – early warning.

An important aspect of risk management in universities is risk management of their research projects. Sharlissa Moore and R. F. Shangraw, Jr. in their article (Moore, S. et al. 2011, p. 61) on managing risk and uncertainty in large-scale university research projects found out that these projects create new challenges and risks for university management. They conclude that these projects often achieve their technical objectives. However, cost overrun and time delays are frequent and significant. It is also found out that the usual project management techniques commonly used in practice that do not comply with the university conditions create additional risks, reaching even anti-management challenges.

Michael Lyons studies another important aspect related to the specifics of risk in universities – the safety culture (Lyons, M., 2016, p. 52). By applying the survey method, he studied the opinions of university staff on important characteristics of safety culture. Considering the shortcomings of the method used, he found out that there was insufficient research on workplace safety culture in Australian universities. Only some of the elements of the safety culture were assessed positively by the respondents. However, at the same time none of these elements met the standards of best practices.

When choosing a particular risk management maturity assessment model to be applied in a university, the available models must be studied, analyzed and evaluated according to a certain set of criteria. One of the most common approaches is to assess the extent to which a given model complies with a standard selected and approved by world practice, such as ISO 31000. However, when applying a similar approach, some additional factors must be taken into account. Risk management practices vary widely and can hardly be covered by a certain, no matter how high-quality document. At the same time, universities are really diverse in nature – with different specific risks. It can be concluded that the model for assessing the maturity of a particular university must be adapted to the specific conditions typical of it.

The principles described in the ISO 31000:2018 standard define that the risk management process must be integrated, structured and comprehensive, customized, inclusive, dynamic, to use the best available information, to take into account human and cultural factors, to be subject

to continuous improvement (International Standard ISO 31000, p. 3). According to the same standard, the risk management process involves activities such as: communicating and consulting, establishing the context and assessing, treating, monitoring, reviewing, recording and reporting risk (International Standard ISO 31000, p. 9). The degree to which these principles are observed and the processes implemented within universities are two of the aspects that can be taken into account when determining the maturity level of the risk management system in them.

On this basis, we can propose further steps in developing a model for assessing the maturity of the risk management system in universities, which should be carried out in accordance with the logic of the standard described above. It is necessary to determine the scope of the model – which structural units of universities will be covered, whether territorial structural units, affiliated facilities, etc. will be analyzed. The model development should be essentially preceded by an analysis of the internal and external environment within which the organization operates. It is necessary to determine which environmental factors are essential for the risk assessment and to what extent a university has sufficient analytical information about them.

An important issue is to establish **risk criteria**. It is necessary to determine what will or will not be regarded as risk to a university. In order to achieve this, universities have to set clear goals and priorities. The same event or circumstance can be considered risky or not, depending on how much it can affect the achievement of universities' objectives. Risk criteria are also determined by universities' attitude to risk – whether they are willing to take risks or not. It is necessary to find out the extent to which universities implement these processes.

Next, the **maturity levels** of a risk management system at a university must be determined. After summarizing the publications studied above, we propose the use of the following levels:

0. Non-existent risk management;

1. Ad hoc risk management (lack of documentation, risk management and risk-taking depends on individual preferences);

2. Initial level (there are experts who perform risk management functions, resources are allocated particularly for risk management, risks are identified by different methods and are managed individually);

3. Defined risk management (a common framework exists for assessing and addressing risks; there is a common understanding of risks within the entire organization; a common procedure exists for identifying, analyzing, prioritizing and documenting risks; stakeholder characteristics are identified, analyzed and taken taken into account in decision-making; risk criteria exist);

4. Integrated risk management (risk management activities are coordinated within universities, there is a common organization of risk management, quantitative methods for risk analysis are applied);

5. Optimized risk management (potential areas for improving risk management are systematically identified, possible options for improvements are evaluated and selected by using rational quantitative methods, the effects of improvements are systematically evaluated).

After establishing the possible levels of maturity, it is necessary to **adjust the model for assessing maturity to the specific conditions of higher education institutions**. We believe that for the purposes of the model proposed in this article, it is possible to use the ideas of Domenic Antonucci, who argues that during the process of adjustment the following should be taken into account (Antonucci, D., 2016, p. 15):

- Organizations' objectives;
- The changing internal and external environment in which organizations operate;
- The changing risk profile organizations adopt.

In the same publication, it is recommended that the adjustment should be oriented towards (Antonucci, D., 2016, p. 138):

- The existing standards and voluntary codes (ISO 31000, COSO and others);
- The existing codes in an organization and other documents regarding corporate governance;
- By sectors;
- By organizations' operating model;
- By risk function operating model;

- By economic value chain;
- By key performance indicators;
- According to an organization's external environment.

In a business-oriented organization, the criterion according to which the model will be adapted is usually the provision of additional value to the business. In a university, it is difficult to use a similar criterion, except (to some extent) for private universities. We believe that the most important criterion should be the role of a university in society, expressed in the assessments of the state evaluating body (NEAA), the opinion of graduates, potential prospective students, and the opinion of businesses.

The next important step is to conduct a pilot assessment of the risk management maturity in a particular university. It is necessary to assess the extent to which a university implements risk assessment processes. The fact that a terminology-related characteristic feature exists must be taken into account. In English, the two terms – 'Risk assessment' and 'Risk evaluation' are translated in the same way – evaluation. For the purposes of the present article, the term 'risk assessment' will be used for the term 'risk evaluation' and the term 'risk evaluation' will be used for the term 'evaluating risk'. Risk assessment is perceived as a set of processes for identifying, analyzing and assessing risk. In the course of the analysis it should be determined to what extent risk assessment processes in a particular university are carried out in accordance with the standard requirements, what methods for identifying and analyzing risk are used, whether the information obtained is sufficient to prioritize identified risks, to determine which risks are managed and what activities should be planned to address each risk. The analysis should also determine what actions are taken and at what frequency to monitor and review the risk management system. It is necessary to establish what documents are being prepared, as well as how often, in order to ensure that all stakeholders have appropriate access to them.

As a result of the pilot assessment, adjustments can be made to the originally developed model to improve its quality and to avoid ambiguities when users try to understand it.

Is it practicable to compare universities by level of maturity? We believe that this is possible, although at the moment it is not necessary to

make a comparison between universities' positions in terms of maturity. The conditions universities operate in, their external and internal environment, and the characteristics of the processes that take place differ widely. The existing experience and the capacity to manage risks is different, the organizational culture, the safety and security culture, the risk management culture vary as well. On the other hand, the comparison could not provide particularly useful information about the university (besides perhaps a feeling of satisfaction or dissatisfaction). It is recommended that each university develop its own maturity assessment model, adapted to its own practice. Of course, it would be highly advisable for universities to exchange good practices and technologies for the use of modern risk analysis methods.

Conclusion

As a result of the analyses conducted when preparing the present article, some conclusions can be formulated and recommendations can be made:

Conclusions:

- Risk management in an organization is a process requiring specific efforts and resources. However, it can provide significant benefits to the organization, including an increase in its value. This statement fully applies to universities as well.
- Universities have certain experience in the practice of managing their risks. This experience is valuable and it is in the public interest to summarize, share and use it.
- Universities have specific functions compared to the fuctions of business organizations. There are two clearly different specific subjects of activity – training students and research. Therefore, their risk management also has certain specific features that must be taken into account when assessing the maturity of risk management systems.
- It is in universities' interest to find out what their position is with regard to the maturity of their risk management system. Thus, they will be able to look for more effective ways possible to improve it.

- In the world practice a great experience exists in assessing maturity. When developing a model for assessing the maturity of risk management systems in universities, this experience should take into account the established principles and methods. However, they should be adapted to the specific conditions in Bulgarian universities.
- The success or failure in developing a maturity assessment model will largely depend both on the commitment of a university's top management, and also on the involvement of all stakeholders.

Recommendations:

- Bulgarian universities are capable of developing and implementing own systems for assessing the maturity of their risk management systems. The results of similar assessments can be useful for their risk management practice and integrate risk management activities into the overall management process.
- It is recommended that all stakeholders should be involved in this development in one way or another, according to their experience and skills.
- The Ministry of Education and Science has the necessary capacity and resources to assist universities in these activities.

The problems related to assessing the maturity of a risk management system in universities will continue to be relevant in the future. The problems are multifaceted and interdisciplinary. Research in this area can be continued in various directions, and the following are promising:

- Adapting the existing methods for collecting and summarizing the opinions of experts on the maturity of specific risk management systems in universities.
- Searching for opportunities to apply modern risk analysis tools in universities, described for instance in ISO 31000:2018. An example of such a promising tool is the development of simulation models for analysing specific risks, risk areas, and in the future – for a comprehensive risk assessment at university level.
- Developing models based on neural networks for analysing risk factors for which it is difficult to establish statistical data for evaluation.

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