University risk assessment and management system

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Abstract: Educational organizations in modern society are full participants in economic activity, they also face various “threats” that affect the quality of their work. The consequences of these threats can be of different levels: as insignificant as well as before the devastating scale that can lead institutions to the partial or complete failure of the educational system. These risks can be located both inside and outside the organization. It is very important to realize that managing risks is possible only when they are known, otherwise it is simply not feasible. To be competitive in the developing area of education it is necessary to identify threats timely, to assess them directly and adopt any management decisions. It is a necessary measure to reduce risk. Such systematic risk management will allow higher education institutions to provide high quality education on their academic programs.

Keywords: risk, internal and external risk assessment, university, quality of education, management.

Introduction
Currently, we can observe a tendency to increase the level of customer requirements for the quality of services provided. Quality is a key indicator of competitiveness. An important factor affecting the quality of educational services provided is risk reduction [1-3]. An important link in assessing the quality of education is the quality of university performance indicators, namely:
- Total and current learning indicators;
- Positive results in career growth of graduates.

Each university independently defines a risk assessment and management system, but all of them often face considerable difficulties. The most obvious issues are:
- Lack of methods which have standard form, or methods upgraded according to the modern form as well as the disadvantages of ones used;
- Shortage of a comparative base of economic indicators;
- Lack of professionals with a high level of knowledge, and skills, and risk management structures.

Main part
Educational organizations meet with various types of risks that are closely related to each other and affect the internal processes of the university. In these conditions, the amendment of one type of risk leads to a change in many others [4-7]. It is for this reason that it is necessary not only to identify the threats, but also correctly group them, only after passing these points, you can begin to analyze the
relationships between risks and their significance of the impact on the achievement of the primary task of an educational institution – providing high-quality education [8-12].

Below is a classification of risks at the university, consisting of the main internal and external risks at the university, which most often affect the quality of education, training and graduation of competent specialists (Table 1).

| Table 1. University Risks |
|---------------------------|
| **External Risks** | **Internal Risks** |
| Refinancing | Not ensuring a high level quality of educational services |
| Economic recession | Discrepancy of certain educational services with market requirements |
| Rivalry between universities | Shortage of prospective students entering university for the first time |
| Reduction of budget funds allocated for education | Unreasonable extra-budgetary spending |
| Changing the labor market environment | Inefficiency of public relations services |
| Reducing the number of people entering the university | University quoting on the market |
| Shortage of budget funds or delaying funding from the Federal budget | Lack of appropriate encouragements and incentives for university staff |
| Reducing the number of funded state budget research | The change of the moral and psychological state in the team |
| The impact of global trends | University Organization Structure |
| Reducing the quality of education at the university due to the development of its branches | Unfavorable working conditions for employees due to low wages and failure to provide of social package |
| Amendments in the legislation of the Russian Federation in the field of education | Ineffective personnel policy (teacher professional development, teacher exchange programs, recruitment of third-party specialists, etc.) |
| Force Majeure | Underdevelopment of the material base |
| Reorganization of the university property form | High cost of studying |

Having worked through these types of risks, we see their overlap among themselves, so it can be concluded that the majority of connections between them for stakeholders fall on the threats that are associated with the quality of training of future specialists.

The definition of threats must be started from the university and completed by the level of consumers, that is, students [13-16].

At the present time, where the constant instability of the level of demand and supply, powerful rates of development of technology and technology, currency changes, every day becoming more fierce competition in the field of educational activities, uncontrolled inflation and many other factors are manifested. All of them give rise to the emergence and development of risk in educational institutions, therefore it is necessary to make correct management decisions regarding quality management, to introduce and use risk management systems in the field of educational activities[20].

In the prevailing market conditions, an educational institution independently decides how and for what purposes to use the available resources: labor, financial, material, technical, information, etc. All these resources should be effectively used in the field of education, therefore the economic responsibility that the organization bears is directed specifically to these aspects [17-19].

It must always be remembered that in a market economy, is efficient one who understands the demands of the market itself, and can steadily conduct its business in various conditions and provides good wages for workers.

The calculations of internal and external risks at the university by the expert method of preference are presented below.
### Table 2. Internal Risks at the University

| No. of | Not ensuring a high level quality of educational services | Discrepancy of certain educational services with market requirements | Shortage of prospective students entering university for the first time | Unreasonable extra-budgetary spending | Inefficiency of public relations services | University quoting on the market | Lack of appropriate encouragement and incentives for university staff | The change of the moral and psychological state in the team | University Organization Structure | Unfavorable working conditions for employees | Ineffective personnel policy | Underdevelopment of the material base | Annual cost of risk |
|--------|----------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|----------------------------------------|----------------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------|------------------|------------------|
| Expert No.1 | 13 | 12 | 2 | 1 | 7 | 8 | 9 | 4 | 5 | 10 | 6 | 11 | 3 |
| Expert No.2 | 13 | 9 | 3 | 2 | 4 | 6 | 10 | 1 | 11 | 5 | 8 | 12 | 7 |
| Expert No.3 | 13 | 10 | 1 | 4 | 12 | 7 | 8 | 3 | 2 | 11 | 6 | 9 | 5 |
| ΣWi | 39 | 31 | 6 | 7 | 23 | 21 | 27 | 8 | 18 | 26 | 20 | 32 | 15 |
| ΣΣWij | 273 | | | | | | | | | | | | |
| Mi | 0.142 | 0.113 | 0.022 | 0.026 | 0.084 | 0.077 | 0.099 | 0.029 | 0.066 | 0.095 | 0.073 | 0.12 | 0.054 |
| ΣMi | | | | | | | | | | | | | 0.61 |
| Mi0 | 0.233 | 0.185 | - | - | 0.138 | 0.126 | 0.162 | - | - | 0.156 | - | - | - |

1 As experts in the risk assessment, employees and students of the Kazan National Research Technical University named after A.N. Tupolev-KAI took part, investigating the issues of quality management in education: Prof. Farid Galimov, Dr. Alsu Kozlova, Ms. Elvira Khabibullina.
### Table 3. External Risks at the University

| No. of Expert | Refinancing | Economic recession | Rivalry between universities | Reduction of budget funds allocated for education | Changing the labor market environment | Reducing the number of people entering the university | Shortage of budget funds or delaying funding from the Federal budget | Reducing the number of funded state budget research | The impact of global trends | Development of university’s branches | Amendments in the Russian Federation in the field of education | Force Majeure | Reorganization of the university property form |
|---------------|-------------|---------------------|-----------------------------|-----------------------------------------------|-----------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------|-----------------------------------------------|-----------------------------------------------|---------------|-----------------------------------------------|
| Expert No.1   | 5           | 3                   | 11                          | 12                                            | 7                                 | 10                                            | 13                                            | 6                                             | 2                                          | 9                                             | 8                                             | 1                                          | 4                                          |
| Expert No.2   | 4           | 6                   | 12                          | 11                                            | 9                                 | 13                                            | 8                                             | 5                                             | 2                                          | 7                                             | 10                                           | 1                                          | 3                                          |
| Expert No.3   | 5           | 4                   | 13                          | 10                                            | 6                                 | 12                                            | 9                                             | 8                                             | 1                                          | 7                                             | 11                                           | 2                                          | 3                                          |
| ΣWi           | 14          | 13                  | 36                          | 33                                            | 22                                | 35                                            | 30                                            | 19                                            | 5                                          | 23                                            | 29                                           | 4                                          | 10                                         |
| ΣΣWij          |             |                     |                              |                                                |                                    |                                                |                                                |                                                |                                             |                                                |                                               |                                             |                                             |
| ΣMi           | 0,051       | 0,048               | 0,132                       | 0,121                                         | 0,08                              | 0,128                                         | 0,11                                          | 0,07                                          | 0,018                                      | 0,084                                         | 0,106                                        | 0,016                                      | 0,036                                      |
| ΣMi0          | -           | -                   | 0,173                       | 0,159                                         | 0,105                            | 0,168                                         | 0,146                                         | -                                             | -                                          | 0,11                                          | 0,139                                        | -                                          | -                                          |
By completing the calculation, it is possible to determine the most significant risks. In internal risks these are:
- not ensuring a high level quality of educational services,
- discrepancy of certain educational services with market requirements,
- inefficiency of public relations services,
- university quoting,
- lack of incentives and presence of unfavorable conditions for employees.
In external risks these are:
- rivalry between universities,
- reduction of budget funds allocated for education,
- development of university’s branches,
- changing the labor market environment,
- reducing the number of people entering the university,
- shortage of budget funds or delaying funding from the federal budget,
- amendments in the Russian Federation legislation in the field of education.

These Internal and external risks in educational activities need to pay much more attention.

Next, a risk map was constructed, in which 3 risk zones are displayed (table 4). In the green zone the degree of occurrence is small and does not require any action. In the yellow zone the risk is significant, action must be taken to prevent the risk. In the red zone immediate actions are required to prevent and reduce the risk or minimize potential losses.

| Zone         | Probability of occurrence, % | Degree of influence |
|--------------|------------------------------|--------------------|
| Green        | 0-30                         | 1-2,2              |
| Yellow       | 30-60                        | 2,3-3,6            |
| Red          | 60-100                       | 3,7-5              |

| Table 4. Risk Zones |
|---------------------|

Table 5. External and Internal Risks, Probability of Their Occurrence and Degree of Their Influence

| No. | External Risks                              | Probability of Occurrence, % | Degree of Influence, points |
|-----|--------------------------------------------|------------------------------|-----------------------------|
| 1   | Refinancing                                | 25                           | 2                           |
| 2   | Economic recession                         | 5                            | 2,3                         |
| 3   | Rivalry between universities               | 60                           | 2                           |
| 4   | Reduction of budget funds allocated for education | 25                   | 3                           |
| 5   | Changing the labor market environment      | 15                           | 1,5                         |
| 6   | Reducing the number of people entering the university | 40                   | 4                           |
| 7   | Shortage of budget funds or delaying funding from the Federal budget | 15                   | 2,3                         |
| 8   | Reducing the number of funded state budget research | 20                   | 2                           |
| 9   | The impact of global trends                | 5                            | 1                           |
| 10  | Reducing the quality of education at the university due to the development of its branches | 60                   | 3,7                         |
| 11  | Amendments in the legislation of the Russian Federation in the field of education | 30                   | 1,8                         |
| 12  | Force Majeure                              | 10                           | 2,9                         |
| 13  | Reorganization of the university property form | 25                   | 1,3                         |
| No. | Internal Risks                                                                 | Probability of Occurrence, % | Degree of Influence, points |
|-----|--------------------------------------------------------------------------------|-------------------------------|-----------------------------|
| 1   | Not ensuring a high level quality of educational services                       | 70                           | 4.5                         |
| 2   | Discrepancy of certain educational services with market requirements            | 40                           | 4                           |
| 3   | Shortage of prospective students entering university for the first time         | 25                           | 3.6                         |
| 4   | Unreasonable extra-budgetary spending                                           | 20                           | 3.4                         |
| 5   | Inefficiency of public relations services                                       | 35                           | 3                           |
| 6   | University quoting on the market                                                | 30                           | 2.5                         |
| 7   | Lack of appropriate encouragements and incentives for university staff         | 25                           | 2                           |
| 8   | The change of the moral and psychological state in the team                     | 20                           | 1.2                         |
| 9   | University Organization Structure                                               | 10                           | 1                           |
| 10  | Unfavorable working conditions for employees due to low wages and failure to provide social package | 35                           | 2.5                         |
| 11  | Ineffective personnel policy (teacher professional development, teacher exchange programs, recruitment of third-party specialists, etc.) | 40                           | 2                           |
| 12  | Underdevelopment of the material base                                           | 25                           | 1.5                         |
| 13  | High cost of studying                                                          | 20                           | 1.5                         |

Figure 1. Map of External Risks at the University
Having examined the maps for internal and external risks, identified risks that are in the red zone and are subject to immediate action to prevent and reduce the risk or minimize potential losses (Fig. 1 and 2).

Conclusion

The quality of the provision of educational services is perhaps the main risk in the activities of the university. It is necessary to take into account that the assessment of the quality of education is a multifaceted approach, and takes into account external and internal goals.

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