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ALGORITHM FOR ASSESSING COMPANIES' RISK EXPOSURE

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Abstract. Nobody is planning to fail, but many companies are failing because of lack of planning. Real business experience showed during the years that crisis can be prevented, avoided or limited. If detected in time, the risks associated with the crisis can be mitigated and the effects can be diminished, with the condition that the actions required are done fast, in a sharp and accurate manner. When it comes, a crisis brings intense level of pressure and under these conditions there is no time or room for mistakes. Delays, losing focus and lack of planning will bring a company one step away from failure. The right way to deal with crisis, if required measures are not done in time, is to minimize the losses and reposition in the best way possible. Analyzing the success stories of some of the biggest and strongest companies in the world, led to an important conclusion: most of these companies were in the situation to face huge crises that threatened their ability to survive in certain moments on their way to success. With the right planning and by setting a proper organizational structure, the negative aspects of the crisis can be turned into benefits and opportunities for the company. The most critical challenge for management is to assess the level of exposure to risk of the company and identify the key points to focus on in order to overcome the crisis and create value. In order to set up a strong plan in dealing with crisis, a business organization needs reliable, efficient and effective tools and this is what this article is all about.

Keywords: *risk exposure, algorithm, crisis prevention.*

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Introduction

Business practice showed that crises can really be prevented and avoided. With the right prevention actions and a proper organizational structure, any company can identify and manage in due time any possible risks that can generate a crisis.

The biggest challenge for the management is to correctly assess the exposure to risk of the company and identify the key points to focus on in order to avoid any possible crisis. Practical experience showed that there is a pattern which appears every time a company faces a crisis.

Based on this finding, the need of a practical tool could be identified, a tool that would make a bridge between the risk management and crisis management practices with the purpose of simplifying the job of the managers in assessing risks and, thus, preventing crises.

Synthesis of the method and technique used in assessing the exposure to risk of a company

Following the theoretical model known as the cube matrix model (COSO ERM), we have developed an applicable algorithm for assessing the level of the exposure to risk of a company, taking into consideration the three-dimensional vectors presented on the cube.

Based on the elements of the Operational Key Points Cube, we created a mathematical algorithm. It measures and grades the importance of every element and the interconnections between them. It calculates the level of exposure of the company to operational risks and it identifies the points of interconnection where the exposure is mostly present how high it is.

The applicable algorithm is based on:

1) Yes/no key questions project

Relevant questions (based on OKRC) are addressed regarding the existing situation of the company. Each and every question represents a point of potential risk (if the answer is "no").

2) Weighting the significance of the questions.

Although the questions are relevant to most business fields and companies, the significance of each and every one of them is different from one company to another and can be changed over time in certain companies.

Different persons from the same company also assess the significance of the questions. Such persons are operating at different levels and areas (departments).

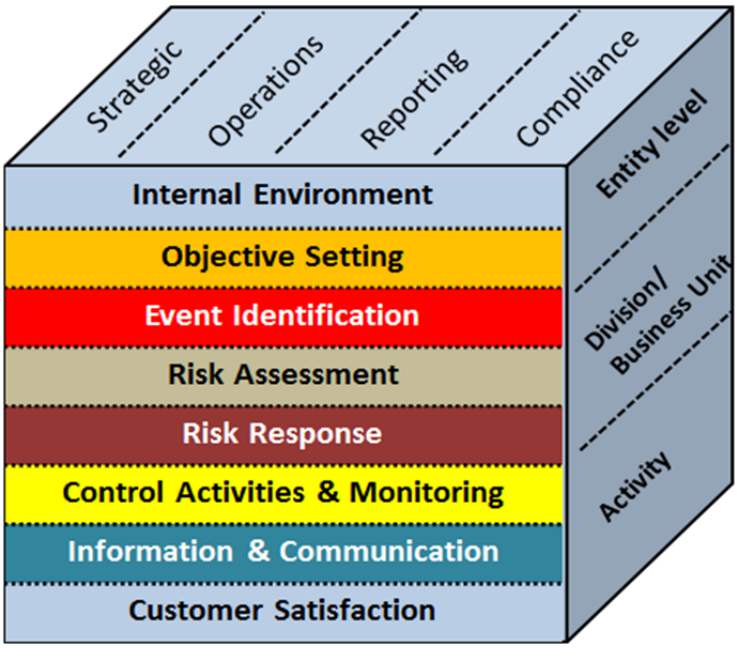

Figure 1. Operational Key Points Cube (OKPC).

The mathematical algorithm calculates the company's exposure to operational risk and maps this exposure in certain activities and levels. Based on the result obtained through the algorithm, the company receives a percentage of exposure to risk, which is illustrated in colored alerts, as follow:

- Red alerts – high exposure, immediate actions for implementation required
- Yellow alerts – medium exposure, actions for improvement required
- Green alerts – no exposure, actions for maintaining required

Practical use of the algorithm – case study

In order to restructure the companies under crisis, the risk assessment process provided by the algorithm was applied on many companies, of different sizes, from different industries and with different types of business activity.

After the assessment process, every company received a diagnostic that showed the exposure to operational risk and highlighted the points within the organization that were the most weak in terms of risk exposure.

Based on this diagnostic, a customized action plan was drawn for each of the three companies, designed to reduce the exposure and strengthen the organizational structure in the face of any possible crisis. The implementation of the customized crisis prevention action plan remained in the duty of the management of each company that was in charge with following the exact instructions.

After all the remedy actions were implemented, the exposure to operational risk was assessed again, in order to analyze the results of applying the crisis prevention action plan and compare them with the initial results. To illustrate the findings using the method of the algorithm, we will further present one study case, from step one until the end of the process of analyzing a company.

Company A is a leading company that delivers premium services in the local automotive industry. The company is providing services in the following fields:

- Rent a car (Business Unit A)
- Operational leasing (Business Unit B)
- Automotive second-hand cars retail (Business Unit C)

During the past three years, the company went through a turn-around process on the occasion of which it was implemented an internal restructuring program with the purpose of improving the performance of the business and increase of the market share.

Structure of the organization

The activity of the company is structured as showed in the below mentioned organizational chart.

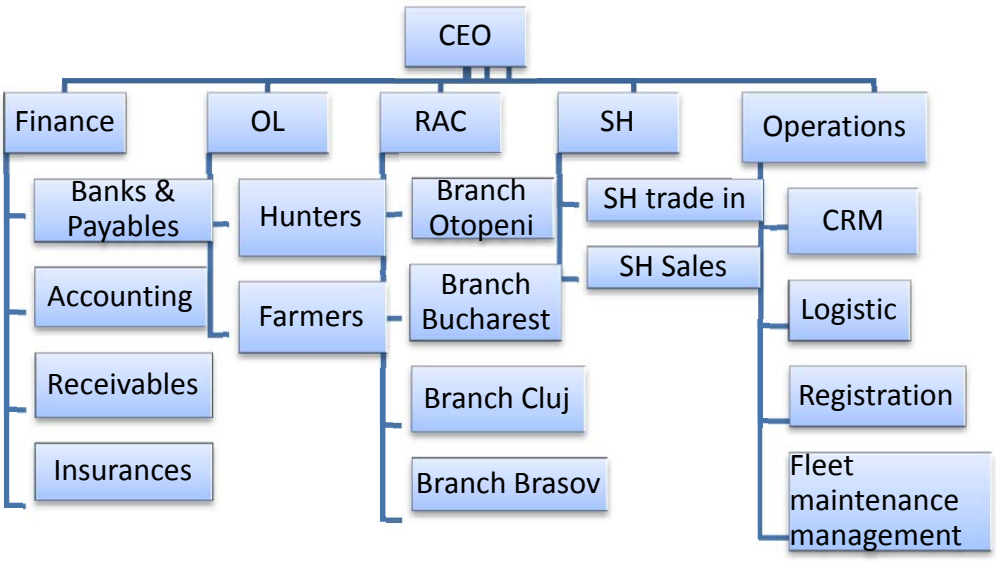

Figure 2. Structure of the organization.

The company is managed by the CEO, who has under his direct subordination the three business units functioning in the company: Operational leasing (OL), Rent a car (RAC) and Second-hand cars retail (SH); and, also, the two divisions that comprise the other operational, administrative and management activities: Finance Division and Operations Division.

Financial and other information

We present below the main financial figures that define the business and the dimension of the company expressed by the number of employees, at the end of the last closed year, 2016.

Table 1.

Financial information

Equity	€	2,848,742
Turnover	€	6,269,616
Profit	€	440,292
No. of employees		95

The operational risk exposure of Company A was assessed at 6 organizational levels and 16 activity levels:

a) Entity level
b) Business Unit A (Rent a car) level
    a. Branch Otopeni activity level
    b. Branch Bucharest activity level
    c. Branch Cluj activity level
    d. Branch Brasov activity level
c) Business Unit B (Operational Leasing) level
    a. Hunters activity level
    b. Framers activity level
d) Business Unit C (Second hand cars retail) level
    a. Second hand trade in activity level
    b. Second Hand Sales activity level
e) Finance Division level
    a. Banks & payables activity level
    b. Accounting activity level
    c. Receivables activity level
    d. Insurances activity level
f) Operations Division level
    a. CRM activity level
    b. Logistic activity level
    c. Registration activity level
    d. Fleet maintenance management activity level

The weight of the questions was established for this company by 5 managers, according to their experience. Each of them is responsible for a certain department in the company's organizational structure and overall management: Financial Manager, Operational Leasing Director, Rent a Car Manager and Second Hand Car Sales Manager.

Their assessment of the weight is subjective, reflecting their own view and managerial approach from every different perspective each of them represent. Weighting the significance of the questions for Company A is presented in table 2.

Table 2

Ranking Company A

Level	P1	P2	P3	P4	P5	Average
1. Entity Level	1	1	1	1	1	1.000
2. Division/ Business Unit	2	2	3	2	3	2.400
3. Activity	3	3	2	3	2	2.600
Objective						
1. Strategic	1	1	2	2	1	1.400
2. Operations	2	2	1	1	2	1.600
3. Reporting	4	3	3	4	4	3.600
4. Compliance	3	4	4	3	3	3.400
Components level						
1. Internal environment	4	4	1	7	1	3.400
2. Objective setting	1	1	2	1	2	1.400
3. Event Identification	8	8	8	6	7	7.400
4. Risk Assessment	7	7	7	5	5	6.200
5 Risk Response	5	5	6	3	3	4.400
6. Control Activities & Monitoring	2	2	3	2	4	2.600
7. Information & Communication	6	6	4	8	8	6.400
8. Customer satisfaction	3	3	5	4	6	4.200

OKPS results for Company A

Based on the answers provided by Company A to the questions required by OKPC assessment, the following conclusions were drawn:

- Out of the total of 768 questions, with a total weight of 19,655 points, 60.32% were answered “Yes”, weighting 11,856 points and 39.68% were answered “No”, weighting 7,799 points;
- *Compliance* area gained the least number of points, resulting a capacity to manage the risks of 38.34% - signaled in red color;
- The organizational level that summed up the least number of points, with a capacity to manage risks of 58.44% was the *Business Unit/Division level* - signaled in yellow color;
- The areas that gained the least number of points were *Event Identification,* with a capacity to manage risks of 43.3% and *Risk Assessment*, with a capacity to manage risks of 22.04% - both signaled in red color;
- The areas that summed up more points, but still remained under the 60% threshold, were *Internal environment,* with a capacity to manage risks of 54.65% and *Customer satisfaction*, with a capacity to manage risks of 54.39% - both signaled in yellow color.

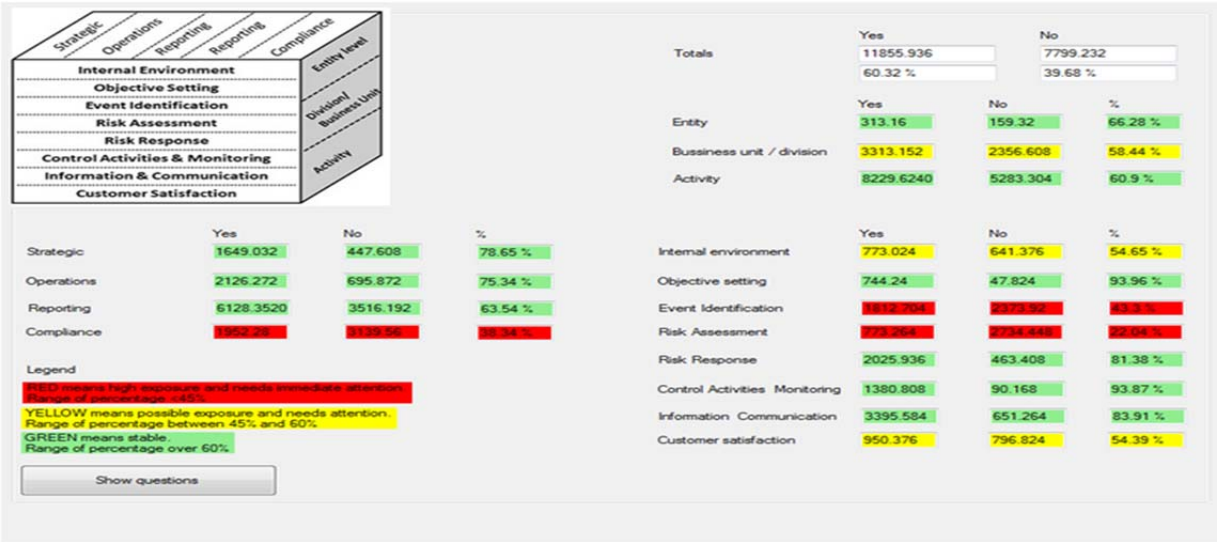

Figure 3. Operational Risk assessment result for Company A.

The company has an *overall exposure* to risk of 39.68%. Analyzed from the perspective of crisis prevention, the company has a capacity to manage risks and prevent crises of 60.32%.

The risk exposure is mainly concentrated on the *Compliance* level, *Event identification* (risk or opportunities) and *Risk assessment*. These levels are all below the threshold of 45%, which makes them highly exposed to operational risk, and they are all signaled in red color.

Compliance objective has a high exposure to risk, especially on the *Business unit/Division* level.

Other areas that are exposed to risk are *Internal environment* and *Customer satisfaction*. These perspectives are in the medium range in terms of exposure to operational risk and they are signaled in yellow.

At the *Business unit/Division* level, risk assessment procedures poorly exist in the company's environment, although the practically response to risk is an area very well covered. As regarding to the broader context in which the operational exposure of the company was assessed, the business and financial performance of the company registered a positive evolution over the analyzed period of three years, which gives the management the proper context to focus on improving the operational situation of the business by approving and implementing the necessary measures for reducing the existing operational risk exposure.

Action plan recommended for Company A

The details of the Action Plan for Company A as well as the timetable and the progress done using the algorithm are presented in Annex 2.1. For the levels *Compliance*, *Event identification* and *Risk assessment*, immediate actions are required to be implemented for remedy in terms of creating the strategy, improving and strengthening the tools and procedures needed to control and monitor the activities down to the most basic ones.

The actions needed are:

- Create and implement event identification procedures and regulations for event identification (ability to identify opportunities and threats) and risk assessment (ability to evaluate the risks) at business unit/division level;

- Create and implement reporting tools for event identification and risk assessment at business unit/division level;
- Create and implement risk assessment tools and techniques across the organization level of business units and divisions;
- Create and implement monitoring procedures and tools to check if event identification and risk assessment are compliant with the defined procedures and regulations.

Internal environment and *Customer satisfaction* procedures and tools need to be improved. This means that for these areas, there are some control instruments in place, such as reporting and monitoring tools, but they need to be improved and strengthened in terms of making them mandatory through the internal regulation system and better monitored.

The *Customer satisfaction* level and *Internal environment* procedures define the values and policies followed in every action by the employees of the company. According to the algorithm's results, these levels must be improved in order to create a uniform image of the company in front of the customers, on the market and internally.

Second Operational Risk exposure assessment for Company A

After eleven weeks, time allocated for the company to implement the recommendations resulted from the first operational risk assessment, a second assessment was conducted, in order to determine how the situation of the company improved as a result of applying the action plan established by the algorithm.

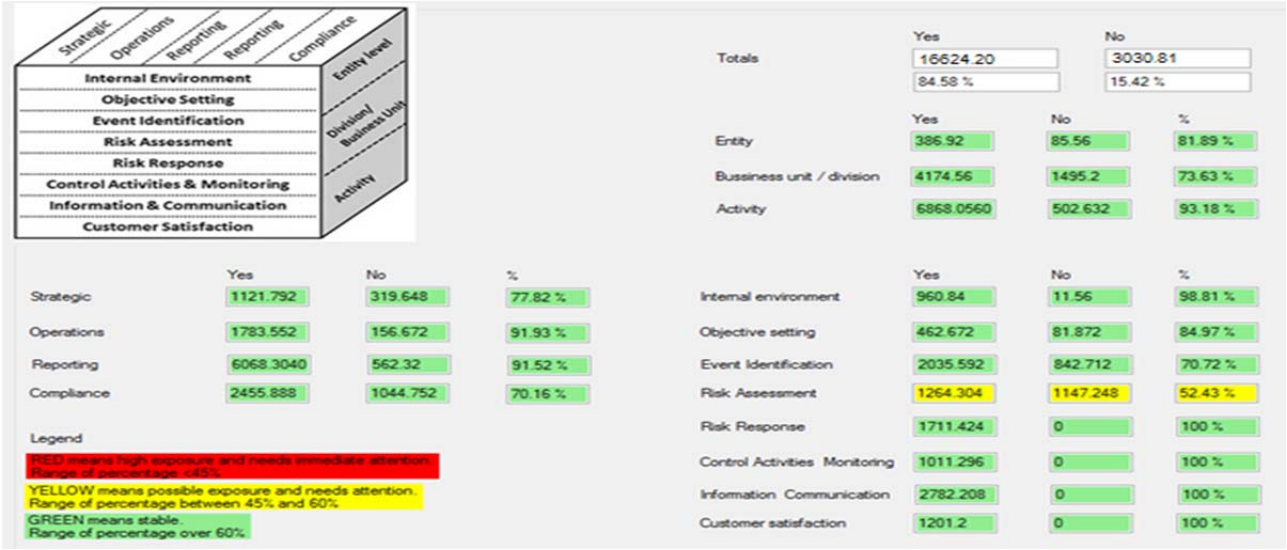

Figure. 4. Second Operational Risk assessment result for Company A.

Conclusions of results for Company A

Due to the measures taken as a result of applying the algorithm in assessing the exposure to operational risk of the company, Company A was able to improve its overall situation in terms of crisis prevention with more than 24%. This improvement was possible by taking the exact and specific instructions based on the weak points identified by the algorithm and was reflected in specific areas of the company.

Due to the fact that, at the moment when the second assessment was conducted, the company didn't finish implementing the reporting procedures and tools for *Risk Assessment*

at Second Hand Car Sales Business Unit, Finance Division and Operations Division, and also the compliance monitoring tools for *Risk Assessment* across all the organization, the exposure to risk in this area remained in the medium range, but the company knew exactly what needed to be done in order to reduce the risk to a stable level.

Conclusions

The impact of using the algorithm from the risk management point of view is, from the practical point of view of risk management:

- easy to use - due to the input mechanism (yes/no questions);
- applicable to all kinds of companies - due to the mathematical formula;
- adjustable to the specifics of any organization - due to the question weighting system;
- offer a complete process of risk management, from identifying and assessing the impact of every risk to the company to treating actions for every exposed point existing in the organization.

The risk management process proposed by the algorithm is much simpler than the ones provided by the other risk management models:

1. *Input* - identify risks
2. *Result* - assess risks
3. *Treatment* - mitigate risks

The first stage of the process is the *Input* into the application of the "yes" or "no" answers to the algorithm questions. In this stage the risks are identified by the algorithm.

The second stage of the process provides the *Result* of the risk assessment. In this stage, the algorithm, based on the answers introduced in the first stage, produces the risk assessment exposure map that indicates the weak points within the organization from the risk exposure point of view.

The third stage of the process is the Treatment of the weak points indicated in the second stage by implementing the action plan resulted from the algorithm. In this stage, the company is removing the sources of the risks that was exposed to.

The algorithm provides a simple, objective and transparent tool for organizational risk management. Compared to the existing risk management models used by companies at this moment, it is a much practical alternative, due to its easy use, explicit results and precise treatment actions recommended. It is not offering just a map or a guide for how to manage risks, but a practical mechanism that can be applied as such, directly on the existing situation of the company.

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