

COMPUTERIZED MODEL OF RISK MANAGEMENT IN BUSINESS

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The occurrence of risk situation and the manager's awareness of it are serious threats for the organization and its objectives. Consequently, the manager has to have available, analyze, select and interpret many pieces of information, under stress, before making a decision for avoiding a disaster. Under these circumstances, a computerized model of risk management is the most adequate solution to make the intervention possibilities effective through a quicker and more accurate intervention. The model offers enough confidence and a favorable psychological state for managing risk. In accordance with this model, the risk manager processes the information by means of some operational (mathematical) methods and that favors reaching optimum solutions in the shortest delay, based on some estimated anticipations through a rational model.

Key words: risk, decision-making, computerized model, business

1. INTRODUCTION

Risk is virtually anything that threatens or limits the ability of an organization to achieve its mission. The following is a definition of risk which will be most useful for the purpose of this article: *“Risk is the threat that an event or action will adversely affect an organization's ability to maximize stakeholder value and achieve its business objectives and business strategies. Risk arises as much from missed opportunities as it does from possible threats”*.

A project oriented definition of a risk is as follows: *“A problem that could cause some loss or threaten the success of your project, but which hasn't happened yet; these potential problems might have an adverse impact on the cost, schedule, or technical success of the project, the quality of your products, or team morale”*.

Whilst a single definition of risk is useful from a theoretical point of view, in practice it is necessary to elaborate on it to generate useful risk management ideas. On a practical level, risk could be categorized in a number of different types of risk groupings. This depends on the relative importance of the considered factors to specific businesses, together with subjective views and cultural issues affecting the corporate view of risk.

For this paper we have chosen to consider risk in four categories:

- *Operational risk* - loss of key staff, IT system failure, image problems, health and safety issues.
- *Financial risk* - market risk, credit risk, liquidity risk.
- *Hazard risk* - environmental pollution, product liability issues, natural disasters, stress claims, property risk.

- *Strategic risk* - reduced insurance company profitability due to the implementation of stakeholder pensions, mergers and acquisitions, changes in demand, political changes.

However, some risks are difficult to allocate to just one of these four categories because they involve two or more elements.

Risk management is a process of thinking systematically about all possible risks, problems or disasters before they happen and setting up procedures that will avoid the risk, or minimize its impact, or cope with its impact.

It consists of policies, procedures, and practices involved in identification, analysis, assessment, control, and avoidance, minimization, or elimination of unacceptable risks. It is basically setting up a process where you can identify the risk and set up a strategy to control or deal with it, and is also about making a realistic evaluation of the true level of risk.

Risk management begins with three basic questions:

1. What can go wrong?
2. What will we do to prevent it?
3. What will we do if it happens?

Any organization should be concerned on this subject and apply into daily practice the following approach, where the elements are performed, more or less, in the following order:

- Identify, characterize, and assess threats;
- Assess the vulnerability of critical assets to specific threats;
- Determine the risk (i.e. the expected consequences of specific types of attacks on specific assets);
- Identify ways to reduce those risks;

- Prioritize risk reduction measures based on a strategy.

A buzzword that tends to be heard more and more often in our days is *Enterprise Risk Management (ERM)*. In business, it includes the methods and processes used by organizations to manage risks and seize opportunities related to the achievement of their objectives.

ERM provides a framework for risk management, which typically involves identifying particular events relevant to the organization's objectives, assessing them in terms of likelihood and impact, determining a response strategy, and monitoring progress.

ERM can also be described as a risk-based approach to manage an enterprise and integrates concepts like internal control and strategic planning. ERM best addresses the needs of those stakeholders who want to understand the broad spectrum of risks facing complex organizations, to ensure they are appropriately managed.

The occurrence of risk situation and the manager's awareness of it are serious threats for the organization and its objectives. Consequently, the manager has to have available, analyze, select and interpret many pieces of information, under stress, before making a decision for avoiding a disaster. Under these circumstances, a computerized model of risk management is the most adequate solution to make the intervention possibilities effective through a quicker and more accurate intervention. The model offers enough confidence and a favorable psychological state for managing risk. In accordance with this model, the risk manager processes the information by means of some operational (mathematical) methods

and that favors reaching optimum solutions in the shortest delay, based on some estimated anticipations through a rational model.

2. HOW THE COMPUTERIZED MODEL FOR RISK MANAGEMENT FUNCTIONS

1. The manager of the risk situation perceives the danger situation and initiates the computerized system:

- the danger situation resulted from the action of the risk factors is defined, based on the information provided by the passive system (data and images);
- M.R.S. (the manager of the risk situation) alarms the whole system;
- the discriminator of scenarios is transmitted using the code of starting a risk management process.

2. The simulation (support) unit provides the basic data of the risk situation:

- identifies the typology of risks and defines the essential characteristic features
- foresees the most probable way of dissemination in the system
- defines, assesses the consequences of the risk situation.

3. The active IT department draws up the action strategy of the system as a response to the action of the risk factors:

- based on the initial data provided by the simulation department, the scenario discriminator chooses the most probable scenario which summarizes the integrating action of the risk factors;
- based on a mathematic model, the unit for measuring and evaluating the system risk, measures and evaluates the consequences;

- the strategy generator draws up the strategy for responding to the action of the risk factors, with the support of the logistic department and other internal and external co-workers.

4. The decision maker analyses the strategy provided and implements it through the decisional process:

- the decision content is formulated;
- it is communicated to the implementation department;
- special measures are implemented for counteracting the action of the risk factors in each department and in the system as a whole;
- results are continuously evaluated, finding the whether the danger state is removed or eliminated.

3. CONCLUSIONS

The optimization of the computerized model depends directly on: information collected from the external stimuli in the database; expertise of professionals who draw up the logical frames of various types of adequate scenarios and mathematic models; the viability of the strategies drawn up for preventing, diminishing or annihilating the action of the risk factors.

Using the computerized models of risk management in business is, nowadays and in the future, the most adequate solution for defeating stress and risk taking by the managers.

Risk management with the help of some specialized tools will represent an important support for sustaining the managerial decision in relation with the evolution of internal and external events in the economic and information conflict area.

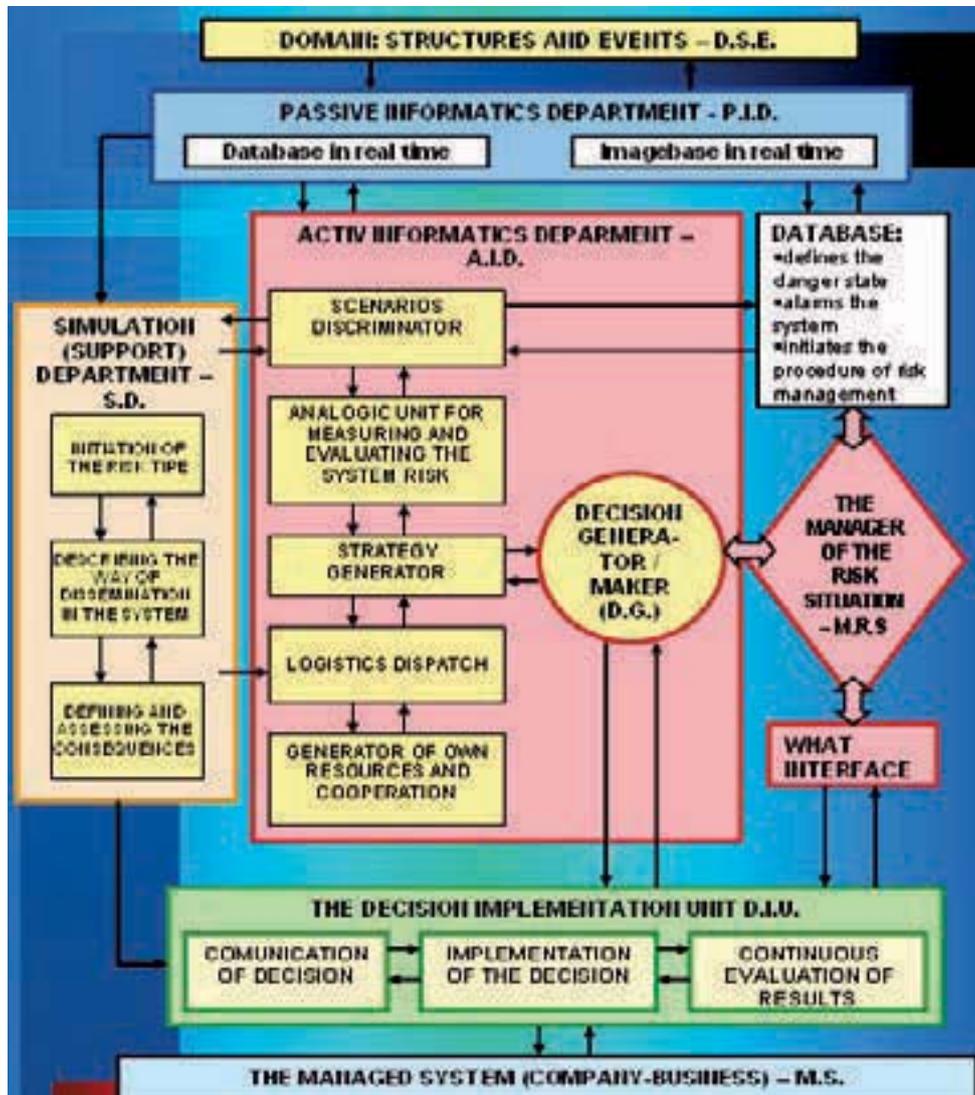


Fig. 1. The functional scheme of the computerized model of risk management in business

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