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# **Risk Management in Business – The Foundation of Performance in Economic Organizations**

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Additional information is available at the end of the chapter

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## **1. Introduction**

A world marked by rapid changes of the economic, financial, political and social environment, a world ruled by uncertainty is subject to the emergence of increasingly higher risks, affecting the process of economic development of world economy. The increasingly frequent manifestation of unforeseen events caused high interest for research in the risk identification, quantification and prevention at the microeconomic level. In this context, risk management can be considered the art of taking decisions in an uncertain environment, on the background of the identification, quantification, analysis and management of the risks which affect an organization.

Why is it necessary an active management of risk? The globalization process, the interdependence between economies in a regional and global plan, the problems arising from the need to ensure compatibility between legislative provisions, the effects of free labor movement, the macroeconomic context located in an accentuated dynamic, the fierce competition at the level of participants from the economic circuits, the limited degree of the resources and unlimited of the needs, the need to adapt to technological changes, the challenges generated of climate change, the high degree of complexity of the factors which influence economic and financial results of the business, the diversity of international economic flows are just some aspects which sustain the organized risk management, training the personnel for managing the activity, the identification of the losses caused by the action of the risk and the insurance of resources necessary to cover them, but also in the identification and communication of the risk, fact which requires the existence of a strong organizational culture oriented to this sense.

Defining risk has been done in different ways over several decades, the polemics continuing today. But regardless of the angle of approach, defining the border between risk and uncertainty, the identification of the management methods, a thing is certain: the existence

of risk. The importance of the risk management is even more striking in the current economic climate, amid a crisis which seems to be having just begun. In these conditions, the timeliness and necessity of the topic is obvious. The existence of an arid land in Romanian economy seeing application of some specific techniques and strategies to the risk impose the immediate development of risk management, especially at the level of small and medium size entities (at the level of large companies it is noticed a considerable orientation towards the risk management, being created even different departments to exercise an active management at the level of risks).

The analysis of the economic-financial performances requires taking into consideration the risk factor as well, and hence of its possible implications on profitability and financial stability. At the level of any economy it cannot be discussed about the existence of some investments. Estimated return does not coincide with the actual one. Therefore, in addition to an analysis of profitability, the manager should also focus his attention on potential risk factors of the investment. In addition to estimating the expected future return it is imposed also a quantification of the risk associated with its achievement. Profit variability may involve achieving a lower return than expected; the higher the profit variation range is, the more risky the investment. Thus, the profitability - risk trend analysis provides a better classification of the investment opportunities. Rational investors, generally characterized by an aversion to risks, will exclude from the list those investments that offer the same return, but with a higher risk, and the option for one of the remaining opportunities will ultimately depend on their degree of risk aversion. Also, some authors consider that the risk is measured as variability in comparison with the profitability average of the last exercises and in foresight as variability of the profit in relation to the hope of profitability or as variability of the profit in relation to the volume of activity (turnover) of the company [1].

Avoiding risks due to significant changes in the activities concerned can be considered a beneficial strategy for the trader, in the context of the possibility of occurrence of problems with serious consequences. Against the background of strong economic and financial instability or when carrying out complex activities involving the development of partnerships, strategies may be adopted to follow fundamental indicators and to develop action plans for risk occurrence (for example, we can predict the resources used in case of higher costs or stocks of spare parts can be constituted to repair equipment and avoid large interruptions in production, are identified the opportunities for rescheduling of exchanges in case of defects which do not allow obtaining the quantity of finished products necessary to comply with the contractual obligations and so on). A commonly used option is that of transferring potential risks to specialized companies or individuals (insurance companies, experts in the field) or to some businesses which provide service for the technological equipment used, even if this generates additional costs.

The emphasized development of the international economic relations, the existence of a complex ensemble of agents that influence the economic-financial performances of the economic organizations, the economic - financial instability, the competitive environment's volatility, the extension of information and communication technologies are just some aspects that support unconditionally the necessity of risk management.

The research conducted aims to clarify an issue considered previously, but also to identify new issues, allowing further future approaches. Thus, the paper will be structured in several important parts, concerning the:

- Presentation of the concepts and theories regarding risk and highlighting the need to manage it;
- Elements of risk identification, with customization at the level of economic entities;
- Risk probability theory in risk study;
- Opportunities for risk assessment;
- The system of indicators that allow the determination of the economic - financial performance of economic entities, and the foundation of risk management decisions;
- The possibility of using discriminating statistical models in determining an entity's financial and economic status and the realization of forecasts on the outcome of future events, in order to provide answers to the managers' concerns to identify and use the most viable means of action in order to develop business and ensure sustainability of the entities they manage.

So, we consider that the problem that managers are facing is reflected by the need to manage risk at the level of any company, which implies: tracking to identify the factors that impact negatively on the work performed; the estimates quantifying the consequences of the event risk; basis for a complex of measures to prevent event risk; mitigate damage caused when it realized; using the services provided by the specialized units in risk management if it is not possible by the entity. Each manager must determine a minimum and maximum risk on the scale that is willing to accept, as a result of the company's results are dependent on them (assuming a higher risk lead to better results but and corresponding losses and vice versa).

## **2. The risks identification at the level of economic entities**

Any firm bases their activity on two major coordinates: satisfying consumer requests and maximizing the obtained profitability. In order to achieve these goals, it is imposed primarily, a sizing of the capital necessary and identifying the funding opportunities. The object of the financing decision is realized by the selection of the sources of capital at the lowest cost for obtaining them in terms of risk reduction. So, developing a financial policy aimed at determining the financing needs for a period of time, selecting a financing structure, meaning a way of funding through its own resources or loans, and establishing the ratio between short-term use of resources or long term. But, all these issues require the identification of potential risks and establishing a strategy which allows reducing or even avoiding their effects.

Before performing a risk analysis, a differentiation between the concepts of risk and incertitude is necessary [2]. The unanimous opinion is that both regard essential categories that affect the general policy of a firm, but, often it has been made confusion between them, putting the sign of equality. In reality, the two concepts are different and proper understanding. The theoretical and practical approach of the two concepts has suffered

many changes due to the more accentuated degree of complexity of the worldwide economy, relations in social area, technological area, economic crisis event, diversification of financial instruments, etc.

The inability of companies to adapt to changes recorded in the external environment with minimal cost can develop into a risk for this. If we refer to this sense, it is clear that any company (even the most profitable ones) is subject to constant risk, being imposed the development of risk management mechanisms to enable a fast referral of the changes recorded but also developing a mechanism of intervention.

A definition of the notion of risk is based on the changes recorded at the profit level compared to the average achieved in the previous years (this can be implemented also to the level of change in future profitability, of revenues to be obtained, of the results recorded). Another manner of approach, illustrates risk as the possibility of producing a fact which has unintended consequences. It is noted that the risk is regarded as the probability of manifestation of an event (possible to predict or not) with negative implications on the economic activity of a company.

Whatever the way of approaching the concept of risk we observe that it transforms the potential losses according to the probabilities of their manifestation, which are known or determined.

Instead, uncertainty implies inability to estimate those probabilities. It can be considered that the uncertainty is similar to a variable that cannot be defined fully as you cannot identify or predict possible events and neither the probability of their occurrence. In other words, uncertainty is present in the fact that it is not known which of the situations will intervene."[3]

In presenting these concepts it can be observed that the risk results from uncertainty. Thus, the inability to estimate an event to occur, of the time of registration and the size of the effects recorded materializes the state of uncertainty. Following, the adoption of decisions today determines the registration of results in the future, these being subject to a state of uncertainty.

At the level of an economic organization, uncertainty is similar with the risks that cannot be identified and estimated. So, any increase of their weight in the total of risks which affect the activity that takes place determine an increase of the uncertainty state and reverse (knowing and anticipating almost fully the risks involved in the activity that takes place is not similar with the elimination of uncertainty). Uncertainty is seen by the manager as the total amount of the consequences of the existence of some potential undesired situations. As a result, the objective or subjective character of uncertainty is reported to the necessity of correlating the opinions and perceptions of the decision maker with logical argument, based on real dates recorded in the previous period.

Obviously, no one can say that he proposed to avoid the uncertainty state, because, as it has been specified, the profound transformations that affect the entire world have such an accentuated dynamic as it would be utopian such an attitude. The bigger and bigger

possibilities of choice make future being uncertain also for who realizes the strictest planning [4]. As a result, it is much closer to reality an acceptance of the uncertainty and maintenance of it in reasonable limits. A study made on a sample of 50 countries has highlighted important differences in the attitude regarding the avoidance of uncertainty, explained by differences of economic conjuncture, but also cultural, educational or behavioral [5]. Clearly, scientific investigation pointed the reduction of uncertainty at different components and behaviors of human mind. But, the activity of people has caused the action of some new uncertainties so that economic and financial crisis, poverty or globalization accompanies us permanently on the evolution scale of the whole society.

The more and more frequent occurrence of unpredicted events has caused a high interest for researches in the field of risk identification, quantification and prevention at microeconomic level. Therefore, ever since 1955, the professor Wayne Snider had defined the concept of risk manager, and in 1956 the concept of risk management appeared. On this background, risk management has known a fast development, being defined also the concept of *global cost of risk*. The definitions given to risk management have either empirical character ("the art of making the right choice, an art based rather on anticipating future events than on the reaction to past ones" , - or "risk management is just common sense") or pragmatic character ("the management of global cost of insurable or non-insurable risks, in a company" – [6]).

Although the concept of risk itself expresses a state of uncertainty and indeterminacy, however, it must be made a distinction of it, starting from the reasoning that we can act for the purposes of identifying opportunities for expressing some options, not only favorable but also unfavorable, and also of the degree of likelihood. In the market economy frame, the concept of risk has been widely debated, without existing uniform opinions, but rather diverse and even contradictory.

If we consider the definition of the explanatory dictionary of Romanian language, respectively: "The possibility of reaching a danger, of having to face trouble or harm suffered; Danger possibly more or less predictable", we can depict the side of probability to express a danger which determines the human factors to identify opportunities in order to prevent and mitigate its effects. Into the specialized dictionaries are meet also other definitions of risk such as, "the possibility that a loan or investment to generate a loss ", and "likely future event, whose production may cause some losses". It can be predictable when factors that cause losses can be predicted in advance and unpredictable when determined by fortuitous circumstances". In the classical theory of decision, the risk is considered **„an uncertain element but possible that always appears in the social and human activities whose effects are damaging and irreversible”**.

From the definitions presented we can depict the conclusion that the risk is an uncertain phenomenon but with a certain degree of probability of event that can cause both losses and the effects which can be removed with difficulty or even at all. The area of risk event is broad, covering both the human side and also the social, political or other nature side. As a result, conscious or unconscious actions exerted on the components of a system can cause expected direct effects, appropriate to the objectives followed, but also the evidence of unwanted direct or indirect adverse effects that the specialty literature defines as risks.



Among the economic agents, there is a wide range of risks arising both from their actions and from the external environment. The development of the society has created new forms of risk and imposed the identification of new strategies and methods for forecasting and analysis of risk and uncertainty. Thus, to the risks caused by natural disasters, the ones related to economic processes and phenomena, armed conflicts, etc., were added also other categories that are often difficult to define or to estimate quantitatively. Thus, there is growing evidence of risks caused by increasing complexity of the business environment, changes in legal systems (especially for harmonization with other legal systems), conducting business in different countries which experience different rates of economic development, the action of political, demographic, cultural, juridical factors.

The group of risks can be realized from more points of view, in the specialty literature being meet many approaches. Without planning to repeat them, we shall try to report especially at those typologies that put in light categories which execute a big influence on the economic-financial performance of the economic organizations (table 1).

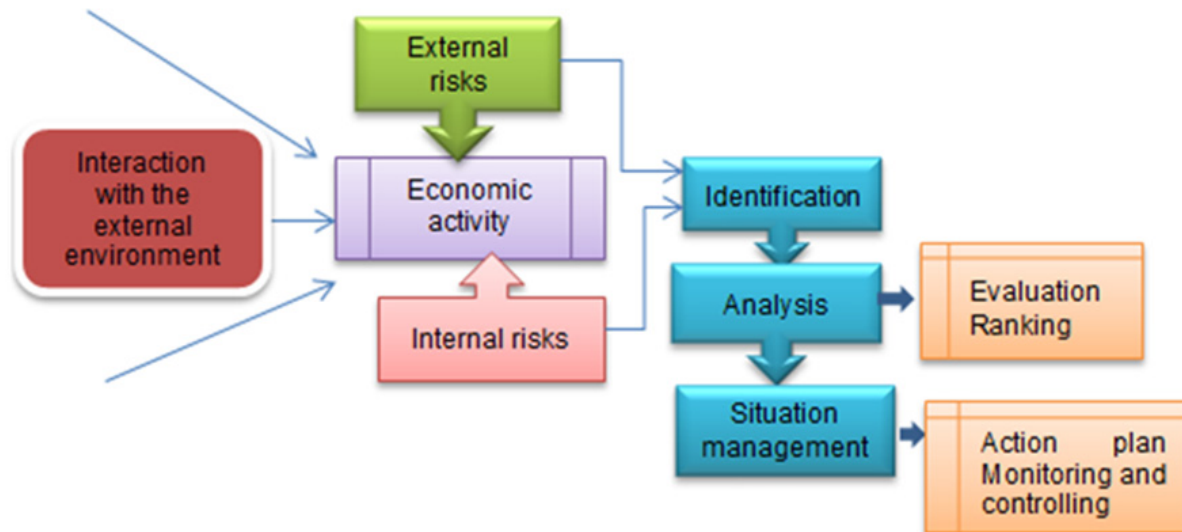
No. Item	Criterion of classification	Type of risk
1.	The source of the risk factor	<input type="checkbox"/> Internal <input type="checkbox"/> External
2	Predictability character	<input type="checkbox"/> Determinable <input type="checkbox"/> Uncertain
3	Nature of risks	<input type="checkbox"/> Natural <input type="checkbox"/> Political <input type="checkbox"/> Social <input type="checkbox"/> Juridical <input type="checkbox"/> Technological <input type="checkbox"/> Economic <input type="checkbox"/> Financial <input type="checkbox"/> Commercial
4	Level of occurrence	<input type="checkbox"/> Macroeconomic <input type="checkbox"/> Microeconomic
5	Type of transaction performed with financial instruments	<input type="checkbox"/> Price risk <input type="checkbox"/> Risk of liquidity <input type="checkbox"/> Credit risk <input type="checkbox"/> Variability risk of the cash flow

**Table 1.** Classification criteria of risks that affect the activity of economic entities

The risks specified can be deducted at their turn on subcomponents and they allow an analysis of generator causes. No matter the classification criterion and the possibility of dividing, one thing is for sure: the risk in business is a certain state, a feature of market economy. Its inexistence could lead to methods of performing the activity by the economic entities not according to the economy realities (practically, this thing would equalize with the existence of some administrative intervention leverages at the level of state that could eliminate freedom of action of the economic operators).

The conclusion of the aspects presented converges in only one way, more exactly that one where there is no probability of performing an activity in a certain environment, of course, no matter the field, branch or sector where an economic agent places his activity. As a result,

exercising an active risk management can only have favorable effects at the level of economic operators. The structure of such a process can be highlighted schematically like this (Figure 1).



**Figure 1.** Structure of risk management process

The activity performed by a company is subject to different possibilities of manifestation of the internal risks and of the external ones, generated by the interaction with the environment. As a consequence, the first stage imposes the identification of different risks their notation in a “register of risks”. Their analysis implies an evaluation and ranking process according to the effects they can generate. The elaboration of an action plan, with clear action measures, for avoiding risks and reducing the losses caused by their manifestation is the next mandatory step. But, there not enough these actions without a permanent verification of the risk management process and performing a rigorous control over the way the corresponding measures are applies so that they record an improvement of the company’s performance.

### 3. Theory of probabilities in risk review

Can it be estimated and avoided the risk only by using the manager's intuition? The answer is clear, demonstrated by daily realities. An inherent aspect of any activity is the possibility of existence of a not desired event, for which it would be ideal at least determining the probability of manifestation. To the possibility of manifestation of a situation, process, phenomenon, etc. it can be associated an interval or one or more concrete answers. In the probabilities theory, these elements are defined as discrete random variables (the ones for which there can be enumerated the results) and continuous ones (those for which there can be placed the results in certain intervals). In practice, there can be also used mixed variables, which report to the possibility of using a combination of the two types mentioned previously for reflecting the possible results (these are specific to the insurance sector).



These probabilities can be identified, but, the recorded results do not appear at the same time also at the level of all variants. For instance, at a bowling competition, you can strike down between 0 and 6 skittles (there are 7 possible results), but only after the throw you will clearly know their number, without being possible recording in the same time two variants. The question is however to assess the probability of the results to action. In the case of discrete variables, things seem simple; the evaluation is possible by reporting favorable variations at the number of possible cases. For example, consider an economic agent who has an order for making furniture for at least one piece of each, but with a higher production capacity. In this context, he would like to know what is the probability to charge a minimum amount of 3000 euro from the sale of the goods mentioned, knowing that the unit price of sale is 500 euro for product X and 300 euro for product Y, and the quantity that can be offered for sale is of 5 pieces of each product. To identify favorable situations, are followed the dates from table 2.

1X, 1Y	1X, 2Y	1X, 3Y	1X, 4Y	1X, 5Y
2X, 1Y	2X, 2Y	2X, 3Y	2X, 4Y	2X, 5Y
3X, 1Y	3X, 2Y	3X, 3Y	3X, 4Y	3X, 5Y
4X, 1Y	4X, 2Y	4X, 3Y	4X, 4Y	4X, 5Y
5X, 1Y	5X, 2Y	5X, 3Y	5X, 4Y	5X, 5Y

**Table 2.** The Matrix of possible situations

Given the minimum amount targeted and unit sales prices, the favorable situations are represented by the following cases: (3X, 5Y) (4x, 4y) (4X, 5Y), (5X, 2Y) (5X, 3Y); (5X, 4y), (5X, 5Y). As a result, there are 7 favorable cases from 25 possible. The probability of obtaining the amount targeted is  $7/25 = 0.28$ . Certainly, the example considered is simple, but we took into consideration highlighting a case that allows a quick estimate of the probability of recording a desired situation. And in the case of continuous random variables, the probability theory gives the theoretical foundation for identifying the possibility of manifestation of a situation.

It cannot be questioned the result of applying these mathematical methods for assessing the probability of outcomes to appear. And still, we must consider the following aspect: how many managers know the probability theory, are willing to apply it and are convinced that they can use it in any case, according to the level of complexity of the factors that can influence the work done? If it would be made a survey in Romania, especially at the level of small and medium organizations, the percentage would be extremely low.

Moreover, the risk management issue in our country has acquired a well-defined contour in a recent period, the researches performed being divided and the simple and the legislation is insufficient and permissive. In addition, although the manifestation of a result can be anticipated through these rational methods, even the term used, “probability” "shows that the activity of the economic agents cannot be translated into logical terms to quantify some uncertain aspects. Also, the use of some statistical data for sizing the probability of the appearance of a phenomenon allows obtaining relevant results when reporting to a large number of different cases that are not interrelated.

In this context, our approach supports the need for linking conceptual issues from the economic theory with the creation of a information database as complete as possible (reported not only to statistical data but also to forecasted information), so that economic entities to identify the trend of the evolution of phenomena and processes that influence the market and over the economic – financial situation. Such behavior would allow them to achieve the obtained objectives established with the available resources and opportunities for action. Obviously, the process of obtaining information is costly. But, what is more important - recording some additional costs generated by obtaining essential information and avoiding unintended consequences through the manifestation of some risks that have not been identified and evaluated? The answer can be supported by arguing that the firm size is conditioned by the need and the information possibilities, also by the information costs [7]. We must not believe that the fact of having a large volume of information on possible alternatives, allows adopting decisions in the absence of risk conditions and uncertainty. But, ignoring the information pushed to the extreme by the rationing "anyway it will happen, with or without strategy "can only be counterproductive attitude, with negative repercussions that can result even in bankruptcy.

#### **4. Possibilities for risk assessment**

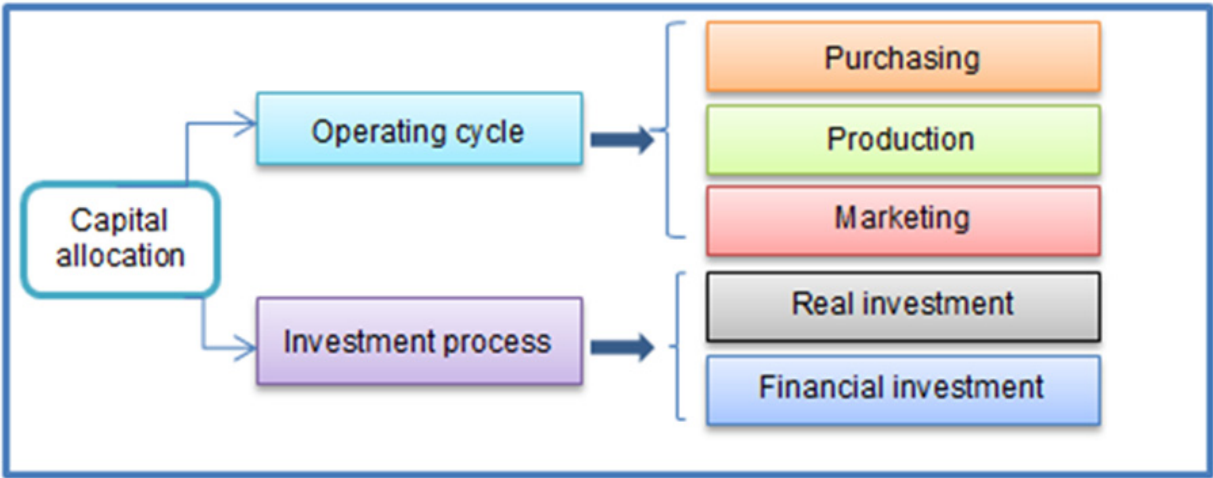
Is risk identification sufficient to determine a course of action so as to avoid or minimize losses? Obviously, the answer is no. An important aspect of risk management is represented by dimensioning its size so that there can be evaluated the effects generated by its manifestation. In general, risk quantification starts from certain assumptions:

- The existence of multiple risks does not determine the reduction or increase of losses specific to a certain category (e.g., the loss caused by the manifestation of interest rate risk does not action over the one arising from environmental risk);
- The manifestation of a risk does not automatically act on the probability of the appearance of another risk (the increase of price of used raw materials does not directly or indirectly influence the risk of the firm's reputation);
- The losses caused by the manifestation of a risk must be under the level of available assets owned by the company.

On any business, the activity is reported on the components, differentiated in relation to the business established at its set up. Considering an economic agent engaged in the activities of production and marketing, we can identify and assess major risks that may occur in the economic, financial, investment and trade area. For this, it is imposed stating the possibilities of capital (Figure 2).

This structure allows capital allocation process targeting specific risk assessment activities of the two components. As a consequence, we shall report to the main risk categories that action at the level of each component.

Running operating cycle determines both revenue and expenditure, activity level all affect profitability. Obviously, these are uncertain and do not remain unchanged from one period to another. The revenue is subject to combined influence of several factors: the volume of production conducted, quantity sold, market demand, sales price. The level of expenses acts on profitability both through the volume and the structure. Thus, a high level of fixed costs will pose a risk for a major operating company. It will be even greater as the sales volume will be lower, the fixed costs will be higher and the output will be made near the critical point (that level, on account of production or profit made are not recorded, no loss). The economic theory offers solutions for the determination of the point where the developed activity does not generate any profit or loss and the economic realities have shown a tendency of bringing forward the growth rate of expenses of the corresponding increase in production due to higher labor productivity, improving the organization of work or assimilation of technical progress. In addition, the increase in the level of production leads to a lower cost per production unit, the allocation base for fixed costs being higher. In this context, companies which registered a high level of fixed costs are much more exposed to risk than those who have a high share of variable expenses. For the operational risk assessment the operators can monitor the level of turnover compared to breakeven. From the surveys conducted it emerges the idea that a difference between them up to 10% reflects an unstable situation, between 10 and 20% - a relatively stable situation and over 20% a comfortable situation. Also, another indicator that allows sizing the operating risk is the operating leverage which reflects the percentage increase of the operating result due to the increase by one percentage of sales.



**Figure 2.** Use of capital at the level of economic agents

The risk manager must analyze all possible risks that can influence the profitability of the operating activity at the level of each phase. In this way, there can be identified and structured a series of risks as presented in table 3.

Phases of the operating cycle	Supply	Production	Sale
Potential risks	<ul style="list-style-type: none"> <li>▪ Choosing wrong the supplier</li> <li>▪ Contracting an insufficient quantity of raw materials;</li> <li>▪ Supplying at intervals that do not allow continuity in ensuring the necessary resources;</li> <li>▪ Concluding contracts with delay and non-compliance with delivery clauses;</li> <li>▪ Recording losses on the time of transport, handling and storage;</li> <li>▪ Accidents of transport time;</li> <li>▪ Recording a high level of expenses with supply and storage.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Obtaining some products at a lower quality level;</li> <li>▪ Insufficient use of production capacities;</li> <li>▪ Use of nonperforming equipments;</li> <li>▪ Use of production direct personnel with low qualification level;</li> <li>▪ Increasing time of cancellation;</li> <li>▪ Supplying the labor job with insufficient quantities of raw materials,</li> <li>▪ Reducing labor productivity;</li> <li>▪ Recording some high specific consumptions;</li> </ul>	<ul style="list-style-type: none"> <li>▪ The low transformation of finished products into monetary facilities;</li> <li>▪ The reduction of the demand for finished products;</li> <li>▪ The increase of the period of time between the moment finishing and that of dispatching;</li> <li>▪ Not complying with the contractual clauses;</li> <li>▪ Increasing the period of settlement period,</li> <li>▪ Not cashing the receivables as a consequence of bankruptcy of clients.</li> </ul>

**Table 3.** Potential risks associated to the operating activity

One of the most important decisions at the micro-economical level is the allocation of capital for the course of the investment processes because they reflect the performance of current costs in order to achieve future revenue. So, the quantity of resources allocated for the investment achievement can determine their success and the business development. Real investments, embodied by essential assets for the development of the production and sale processes, are the subject of differentiated risks, the ability of managers in the selection of projects that ensure the maximization of the economic agent value being essential. To substantiate the investment decision, the practice imposed certain elements that allow the sizing of the efficiency of the analyzed project, namely: the amount of invested capital, life of purpose, net cash flows, residual value and the discount rate [8]

The criteria that can be applied to analyze the investment project must relate to an uncertain environment because a certain environment does not exist in reality. Building some models on the assumption that future cash flows are certain, it has an explanatory nature. In a deterministic economic and social environment is assumed the previous and certain knowledge of the interest rate and future monetary flows of the investment projects. Possible variations in interest rates and the risk of an improper activity, that of achieving breakeven (the dead point) and/or to become insolvent and to go bankrupt are not included in the calculation base for the investments efficiency. As a result, the foundation of the investments decision in a certain environment has more a theoretical nature, of understanding the essential tools of the analysis of investment projects. It is about using the actuarial computations in selecting investment projects or project portfolios that maximize the wealth of equity investors (shareholders and creditors) and thus maximize the enterprise



value. Concepts of interest rate as rate of productivity without risk ( $R_f$ ) and net present value (NPV) are in the center of the analysis in the certain environment.

The determination of cash flows generated by the investment project and of the moment of their action, the balance of the capital market and the practice of an unchanged interest rate for a long time that allows the exact identification of the borrowing costs are items that cannot be recorded on different market segments. In this context, the estimation of future positive and negative flows is a difficult operation which can be completed with an unreal perception and therefore a failure in the investment process. Estimation can be achieved by identifying some probability elements in the registration of certain levels of the used indicators even in an uncertain environment. The states of uncertainty can be generated by the investment project or the market. So, the manner in which is done the investment projection, project implementation and its use, and also the capital market fluctuations, the competitors' actions, the manifestation of possible financial and economic crisis can generate risks and differences between predictions and reality. For the embracement of an investment decision in the probabilistic environment are required the following steps: the sizing of the positive and negative flows in different probability assumptions, the measuring of the investment risk, the adoption of investment decision for a specific project [9].

To achieve the first stage it is necessary the sizing of the mathematical hope, respectively the expected annual average value of the cash flows and their comparison. The comparison can be done with the update of the cash flows or without this operation. The mathematical expectance of the cash flows of the investment projects is determined by the weighting of the annual flows (estimated in three ways: one positive or optimistic, one pessimistic and one medium) with their probability of implementation (this is determined either statistically or by consulting specialists with experience in the field or on the investor's intuition and the sum of the probabilities must be equal to the unity). When there are analyzed several projects, it is obvious that it will be chosen the one that generates the greatest mathematic hope of realizing the future returns. Comparing the projects allows better results if it is used the technique of flows update. The drawback of this criterion is that it does not take into account the variation of the results around the average. As a result, in financial practice, it can be used the criterion of dispersion of the total net discounted absolute cash flow. In this sense, it is considered the best project the one which determines a total discounted net cash flow that has the smallest dispersion.

The risk reflects the possibility of undesirable results. In the investment process, the risk is much higher than in other economic activities because the effects are recorded for long periods (resulting the difficulty of accurate predictions of the obtainable effects) and the negative flows have comfortable values that can materialize in losses (in case of failure). For the avoidance of the risk, the investor may choose: the increase in the discount rate with a differential percentage according to the degree of risk associated with the type of investment (for example, the replacement investments are associated with a very little risk, the upgrading of the existing equipment in use involves a low risk, new investments have a higher risk while the strategic investments involve a substantial risk), but manifesting a degree of subjectivity in determining its size; the execution of an investment plan which can



be varied according to specific conditions both from the point of view of costs that have to be made and also from the point of view of performing gradually the investments during their execution; projects with a lower lifetime (to avoid negative effects of the obsolescence, and also for projects that allow faster recovery of the invested capital).

At the same time, however, it can be measured the risk by using some mathematical methods. The risk can be measured by using the dispersion or the intermediate square deviation of individual flows to the mathematical expectation. The smaller the dispersion is, the lower the investment risk is. This process involves a comparison between the sizes of the dimension of variation period of the rate of return for different investment projects. Practice also stated another procedure that allows accurate identification of optimal investment solution, referred to as the standard deviation [10], which reflects the small deviation of the distribution of probability of the return. For example, we consider two projects, X and Y, for which there are estimated the following rates of return and probability distributions (Table 4).

Projects	Version	Optimistic	Medium	Pessimistic
X	Productivity rate	25%	15%	5%
	Probability	0,3	0,5	0,2
Y	Productivity rate	30%	20%	-10%
	Probability	0,3	0,5	0,2

**Table 4.** The rates of return and the probability of occurrence for investment options

For the risk assessment of the two projects we proceed as follows:

- It is determined the weighted average of the return for the two projects:

$$R_{mX} = 0,25 \times 0,3 + 0,15 \times 0,5 + 0,05 \times 0,2 = 0,16$$

$$R_{mY} = 0,30 \times 0,3 + 0,20 \times 0,5 - 0,10 \times 0,2 = 0,17$$

- It is determined the amplitude of the variation of the rate of return with standard deviation (table 5).

Project	Probability	Productivity rate	Average of productivity rate	Medium quadric deviation	Standard deviation
Project X	0,3	0,25	0,16	0,81	0,243
	0,5	0,15	0,16	0,0001	0,00005
	0,2	0,05	0,16	0,0121	0,00242
					0,24547
					$\delta = 0,495$
Project Y	0,3	0,30	0,17	0,0169	0,00507
	0,5	0,20	0,17	0,0009	0,00045
	0,2	0,10	0,17	0,0049	0,00098
					0,0065
					$\delta = 0.0806225$

**Table 5.** Determination of risk based on the spread - type (standard approach)

It is found that the lowest standard deviation is recorded in the project Y, the decision maker choosing for the realization of this project.

In the process of adopting an investment decision, the decision makers can use the breakeven analysis, the sensitivity analysis, the decision trees method, the simulation method.

Getting a higher rate of return is an objective aimed of any economic entity. Achieving this is often conditioned by the level of available resources. The insufficiency of own resources determines the use of borrowed resources, which increase indebtedness. If the economic profitability is higher than the financing costs for borrowed resources, the leverage effect is positive (otherwise the effect is negative). The manager must not omit, however, that a change in the financial structure may cause the increase of financial risk, without being possible an exact identification of the period in which insolvency may occur, especially because obtaining a rate of return greater than the cost of borrowed capital is not dependent only on the work done by the economic agent but also on the joint action of some external factors: competition, the evolution of energy prices, fuel, raw materials, the emergence of substitutes; the manifestation of some crisis with large amplitudes, the demand. Therefore, establishing a break-even point as a range rather than a fixed size seems a much more useful solution in avoiding financial risk [11].

The indebtedness and the insolvency (the insufficiency of available resources for the discharge of outstanding debt) are at the basis of the determination of insolvency and bankruptcy. These should be analyzed not only at the level of a financial exercise, because insolvency occurs when liabilities of previous period, to which we add the present and future ones, are higher than the existing availabilities and those that will be cashed in the future. To predict and avoid the bankruptcy risk it can be used a system of indicators represented by solvency ratios (these allow the sizing of the liquidity of a company), leverage, financial debt repayment capacity and the rate of financial autonomy. But, the expectation of a state of financial difficulty should not be synonymous with the liquidation of the firm. The manager can present to the creditors a plan for the recovery of the activity, and if they accept taking risks by granting new loans or rescheduling debts, the bankruptcy situation can be rectified.

In Romania, the insolvency law was adopted in the year 2006, when bankruptcy law was repealed. According to the legal provisions, an economic agent that is unable to pay his debts at maturity is obliged within 30 days from the date of recording this situation, to address the court showing that he wants to enter in the simplified procedure or reorganization one in accordance with a plan, with the to pay its debts. Not respecting the plan or the record of new losses determines the judicial administrator, the creditors committee or the special administrator to enter into bankruptcy.

From the data analysis presented in table number 6 there is a significant growth in 2006 and 2007, explained by the change of legal provisions in the field. The situation was set in 2008, but as a result of the global economic-financial crisis and fiscal measures taken by the legal authorities, the number of bankrupt companies increased considerably in 2009. For a complete vision of the situation recorded in the business environment from Romania as a

result of the measures stated, we must provide other information. Thus, in 2009, 133.362 companies have temporarily suspended their activity, marking an increase of 1009,59% compared with 2008, 18766 have requested dissolution (increase of 398,83% compared with 2008) and 43616 were canceled from the Register of Commerce. Also, over 50% of Romanian companies with a total of more than 50 employees have opted for layoffs of staff, and from all these entities only 4.23% have recorded an economic growth.

Year	Number of bankruptcies	Coefficient with the base in series
2006	10431	45,19
2007	14104	35,21
2008	14483	2,69
2009	18421	27,19
2010	21692	17,76
2011	22650	4,42

Source: www. coface.ro

**Table 6.** Evolution of bankruptcies recorded in Romania between 2006 – 2010

An analysis of the existing data for highlighting the number of bankruptcies for the first 10 fields of activity reveals the most exposed sectors to this risk (table 7).

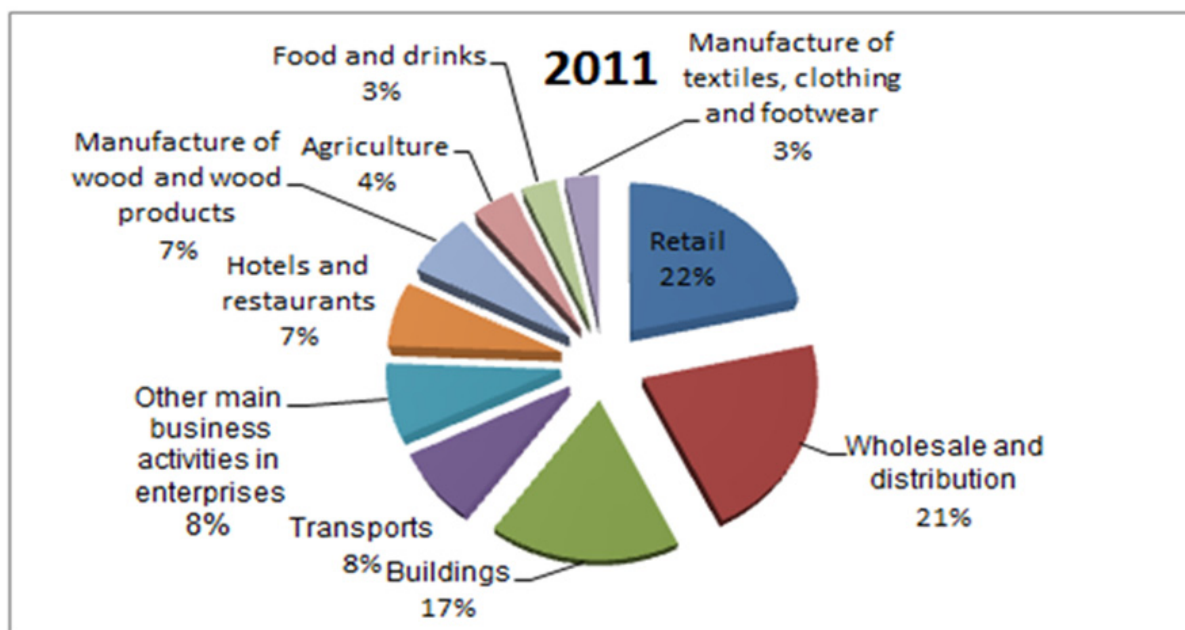
Field of activity	2006	2007	2008	2009	2010	2011
Retail	1935	2371	3553	3684	4178	4423
Wholesale and distribution	1909	3431	2932	3501	4262	4358
Buildings	588	1066	1666	2497	3172	3548
Transports	383	723	811	1237	1555	1596
Other main business activities in enterprises	354	625	718	979	1340	1402
Hotels and restaurants	322	520	782	1022	1275	1385
Manufacture of wood and wood products	575	810	793	927	955	866
Agriculture	1382	1093	575	934	668	686
Food and drinks	1133	1064	627	573	641	672
Manufacture of textiles, clothing and footwear	570	731	705	762	793	645

Source: www. coface.ro

**Table 7.** Distribution of bankruptcies recorded by sectors of activity (first 10 positions)

It is noted that the most exposed sectors are: wholesale, retail and construction, these retaining the “leadership” in almost all years of the period analyzed. In 2011 the shares held by them are of 21%, 22% and 17% (Figure 3).

The main factors that have caused major financial difficulties were: reduced possibilities of financing and aggravation of credit conditions, a significant reduction in consumption, with a direct impact on the demand of goods and services, the establish of new tax liabilities, products prices increases, particularly in the energy, fuel and raw materials level, the excessive bureaucracy, lack of an incentive package for the development of the business area, difficulties in the mechanism of absorption of community funds, the examples could continue.



**Figure 3.** Structure of bankruptcies on sectors of activity in 2011

## 5. The system of indicators that allow the highlight of the economic-financial performances of the economic entities and the substantiation risk management decisions

Maximizing the efficiency of the activities performed at the firm level requires a constant monitoring of the financial performances. In other words, to optimize economic performances is necessary to implement a financial diagnostic system of the performed activity, resulting in a series of documents that include a set of indicators requested by the management team. It is obvious the fact that the efficiency of the system is determined by the type of documents requested, by the way in which cooperation takes place between different components of the company but also by the technology used in the development of the reports.

To estimate the financial status of a firm there can be used use a series of indicators that allow highlighting the profitability, solvency, liquidity, turnover of debts and the degree of financial independence. The activity of financial diagnosis of a firm can be made to determine the situations of financial disequilibrium and of the generating causes, so that there can be adopted in time the necessary measures for effective management. In this case, are involved the managers, shareholders and the employees. However, the diagnosis may cover the company's ability to make profit, to record surplus flows in comparison to the negative ones due to the activity performed, to honor payment obligations, cases in which it is performed by persons outside the firm (banks, potential investors, customers, competitors, state). But, even if it concerns an internal or external analysis of the activity undertaken, the objectives followed are the assessment of economic and financial performance and identification of the potential risks that may occur.



But a real analysis involves not only determining the state of the financial balance and liquidity of a firm but it should aim to identify the margins of cash accumulation. To this purpose, there can be used the information provided by the profit and loss account statement which summarizes the outcome of economic and financial flows of entry, the combination of production and output factors over the period considered. Basically, this document creates a group of incomes and expenditures which have determined the overall result for the ended financial year and allows assessment of the overall economic and financial performances achieved by the firm by using some performance indicators. Known as intermediate management account balances these indicators are underlying preparation of financial statements analysis and forecasting, providing managers the possibility to identify deviations from the predictions made by categories of activity. Thus it can follow the degree of turnover achievement and the anticipated gross margin, carrying out the operating expenses in limits set, the impact on the indebtedness degree on current outcome, obtaining the estimated profit.

Sizing the economic and financial performances is based on the diagnostic analysis, which aims to identify responses to a series of questions related to the results obtained, how they were obtained, the levels recorded compared with those projected, of the measures that can be adopted to achieve the objectives, both short and medium term and long term. The diagnosis-analysis is based on synthesis accounting documents (the situation of assets, liabilities and equity - balance sheet, financial results - income statement and attachments) and other information on the evolution of prices and exchange rates [13].

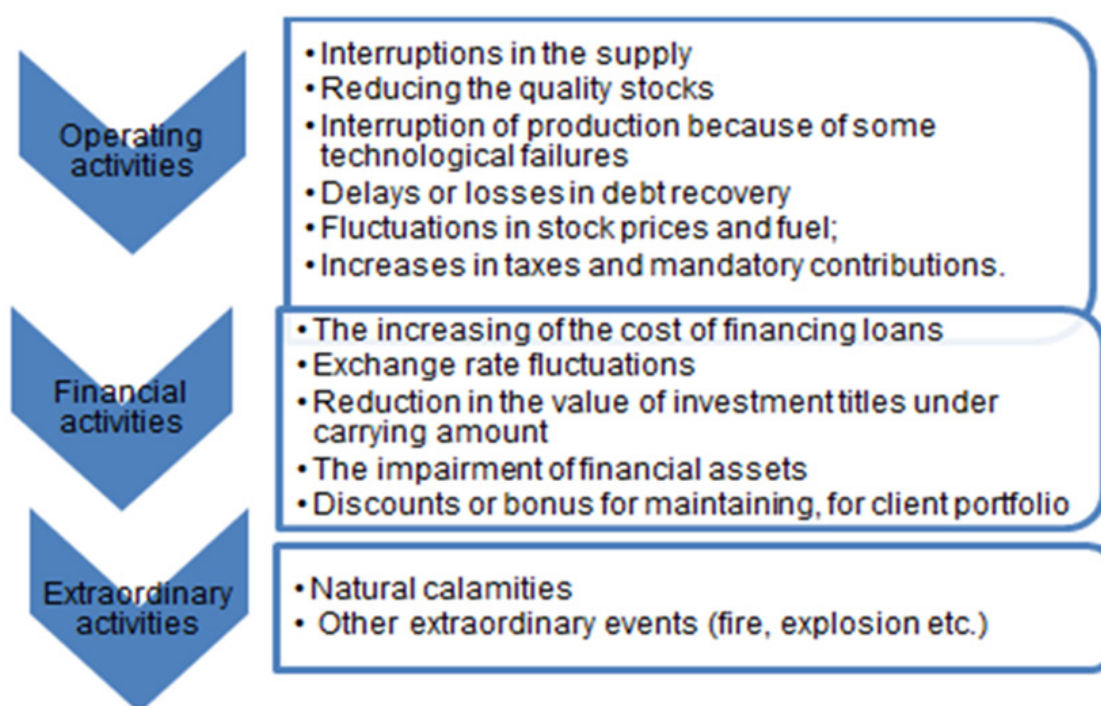
The sizing activity of the financial and economic performances should be carried out continuously and not only in difficult situations, as Jean- Pierre Thibaut stated "Performing some analysis is motivated not only whether the company has difficulties, but also when it wants to improve the results obtained". Practically, realizing continuously some analysis of the financial statements concerns the achievement of information necessary for taking decisions by managers in a rational manner.

The analysis made must be supplemented by a series of liquidity indicators such as the overall liquidity, immediate liquidity, ability to pay rates, coverage degree of daily expenditure, the rotation period of assets, debt indicators, namely: indebtedness, the degree interest coverage, total debt ratio, leverage, general solvency ratio, management indicators (duration of stock rotation, customer flow, credit suppliers, non fixed, fixed and total assets) and other indicators of profitability.

Whatever the type of indicators used, the decision maker must consider a number of issues related to the need to supplement the fixed analysis with dynamic analysis (permanently there occur changes which can affect the results recorded at a moment in time) but also the use of a complex system of indicators (making analysis based on a single indicator may lead to misinterpretation) which are able to show clearly and accurately the financial and economic performance level of the company.

The activity done by any economic entity can be structured at the level of three fundamental components: operating, financial and extraordinary (Figure 4). The manager must identify the potential risks for each component so that it can base an effective strategy.



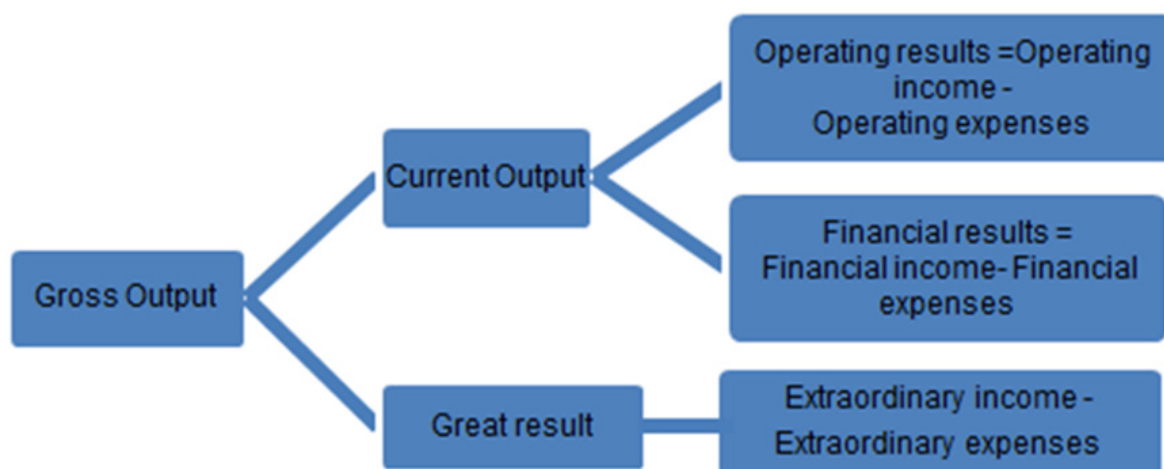


**Figure 4.** Structure of developed activities and risks afferent

Obviously, is not enough an overview of these risks, without a detailed analysis of the causes. For example, the risk, “cutoffs in the supply ”can occur from multiple causes. Thus, the supplier fails to comply with the contract clauses regarding the delivery terms or quantities established , may occur accidents during transport, the quality of goods supplied is not according to the requirements established, which leads to their refusal by the buyer, there take place extraordinary events ( fires, floods, earthquakes), etc. Also, these cutoffs may have a short, high or very high length, with direct implications on the production process, or, as appropriate, in marketing (minor, significant or major). The analysis of these issues should be completed with the assessment of the losses caused by the manifestation of the mentioned risk. Another example can be the one of the risk of increasing taxes and fees. The causes in this case are external, but applying the principles of fiscal management can only have a favorable impact on the financial performances of the company.

Risk management should be based on an analysis of indicators highlighting economic financial performance at the level of the activities shown in figure number 5. But it requires a detailed breakdown of the indicators presented in order to identify the contribution of each component in recording a result or another, being not enough to follow-up the synthetic level. In addition, if not takes into account also their dynamics and not is not corroborated with factors of influence and circumstantial situations, it is not possible to determine the causes that generate negative effects and no anticipation of any difficult times.

The main components that are at the base of the formation of the gross result, are presented in Figure 5.



**Figure 5.** The formation of the result of activity performed broken down by components

The operating result is decisively influenced by the level of income and expenditure obtained. As a result, the manager must seek firstly the dynamics and the structure of sales. The risk of reducing them may be caused by:

- emergence of new competitors;
- reduced consumption due to the manifestation of strong economic and financial crisis;
- insufficient promotion of products;
- emergence of similar products at lower prices, on the basis of labor productivity growth at the level of competitors;
- punishment by consumers low quality level of products supplied;
- existence of a structure based mainly on marketed products which determine lower revenues.

At the same time, it is necessary to identify the impact of the costs upon the operating result. Thus, an increase in costs can be determined by:

- rising prices of raw materials supply, fuel and energy;
- record of high specific consumption per product unit;
- technological losses;
- low labor productivity;
- use of technologies worn out, etc..

But, a great importance is had not only by the determination of the indicator stated and by the analysis of its components, but also by the investigation process from the dynamic point of view because it can provide additional information on level of performance correlated with potential generating causes. In this respect, it is necessary to calculate the indexes that diminish the evolution of operating incomes and operating expenses and their comparison (Table 8).

We consider that the income index is calculated as ratio between the income from current period and the income obtained in the previous period. We use for comparison the index from total incomes and the index from operating activity.

Cost index	Method of calculation	Index compared with income	Effects	Causes
Index of total expenditure	$I_{CT} = \frac{CT_1}{CT_0} \times 100$	$I_{CT} > I_{VT}$	Economic inefficiency: the consumed loss-monetary unit Bankruptcy	<ul style="list-style-type: none"> <li>• Imbalance in the components</li> <li>• Inappropriate management of the entire activity</li> </ul>
Index of operating costs	$I_{CE} = \frac{CE_1}{CE_0} \times 100$	$I_{CE} > I_{VE}$	Diminishing profit	<ul style="list-style-type: none"> <li>• Inefficient consumption in comparison with the efforts</li> </ul>
Index material costs	$I_{CM} = \frac{CM_1}{CM_0} \times 100$	$I_{CM} > I_{OV}$	Profit reduction amid the inefficiency of materials consumption	<ul style="list-style-type: none"> <li>• Wrong choice of suppliers</li> <li>• Weak report price/performance compared to other suppliers</li> <li>• Faulty delivery conditions</li> <li>• Improper management of material elements</li> <li>• Inappropriate quality of the materials</li> <li>• Losses in the technological process;</li> <li>• High specific consumptions;</li> <li>• Inappropriate storage of materials.</li> </ul>
Index of personnel spending	$I_{CP} = \frac{CP_1}{CP_0} \times 100$	$I_{CP} > I_{CA}$	Ineffective personnel costs	<ul style="list-style-type: none"> <li>• Remuneration uncorrelated with effort (inefficient relation between wages and productivity);</li> <li>• Low level of staff training compared with the requirements of the position held;</li> <li>• Increases of the expenses with insurances and social protection;</li> </ul>
Index expenditure taxes	$I_{CIT} = \frac{CIT_1}{CIT_0} \times 100$	$I_{CIT} > I_{CA}$	Reducing the capacity of an auto financing in the future	<ul style="list-style-type: none"> <li>• External capacity that cannot be controlled by the manager;</li> <li>• Increases of the taxes or establishing additional fiscal obligations</li> </ul>

**Table 8.** Effects and causes of the evolution of revenues and operating expenses

Analysis can be extended to the other components. Thus, if the index exceeds the financial cost of financial income, there is an inefficiency of the funding policy (table 9).

Cost index	Method of calculation	Index compared with income	Effects	Causes
Index of financial expenses	$I_{CF} = \frac{CF_1}{CF_0} \times 100$	$I_{CF} > I_{VF}$	Reducing available resources	<ul style="list-style-type: none"> <li>• Use of mostly borrowed resources in comparison with the own ones;</li> <li>• Inefficient use of the financial resources;</li> <li>• The increase of interest rate for the loans contracted;</li> <li>• Recording some unfavorable differences for the exchange rate;</li> <li>• Disposal of investment securities at a lower value than the book value;</li> <li>•</li> </ul>
Index of extraordinary expenses	$I_{CEX} = \frac{CEX_1}{CEX} \times 100$	$I_{CEX} > I_{VEX}$	Reducing the gross profit of the year	<ul style="list-style-type: none"> <li>• Natural disasters</li> </ul>

**Table 9.** Effects and causes of the evolution of financial and extraordinary revenues and expenses

Causes may include the prevalence compared with their borrowed resources; increase the interest rate on loans, recording a difference of an adverse exchange rate, yielding investment securities at a lower value than the book, etc.

If the operating result and the financial one are positive, there is a state of, “financial health” in the company, which, combined with a shorter duration of the credit customer compared with the credit provider (the collection of receivables is achieved at a shorter interval than the payment of liabilities), determines a state performance. Situations that can occur in practice are presented in table 10.

In this connection, we draw from the research conducted a series of ideas to be considered of being in risk management:

- Determination of indicators is based on the information recorded at a time (the end of a financial year), without taking into account the dynamic changes recorded;
- Analyzing the performance indicators that do not allow forecasting famous risks of integrated business, respectively the dependence on suppliers and customers;
- Distortions in the functionality of the production, supply or sale may adversely affect the overall activity performed, although a past performance can mark a positive situation;



- Ensure the ability to pay and the cash required is determined by the system performance indicators, a high level of profit recorded in the profit and loss does not always correspond to the actual cash flow - so, large companies faced with situations such as the current way of calculating the profit is based on elements whose achievement is not always certain (for example, claims that cannot be collected due to customer bankruptcy or financial bottlenecks) or equivalent of non-specific economic flows of the financial year.

Results recorded	Generated financial situation	Measures imposed
$Re > 0$ $Rf > 0$	Financial performance	Continuing the activity in the same direction, in accordance with the action plan set.
$Re > 0$ $Rf < 0$ $Re >  Rf $	Good financial situation	Reducing financial expenses (use of a financing structure which determines the lowest cost of obtaining resources)
$Re < 0$ $Rf < 0$	Difficult financial situation	Reorganizing the activity
$Re < 0$ $Rf > 0$	Strategic situation	Reducing at a minimum level the interval in which are recorded these ratios

**Table 10.** Situations determined by the evolution of the components of the current result of the year

### 6. Using the discriminating statistical models in determining of financial and the financial condition and the risk analysis

The financial condition of an economic agent can be considered a qualitative indicator that characterizes the overall activity of the economic agent, is subjected continuously to the influence of quantitative variables. This allows the use of statistical discriminant analysis to determine the financial status of an economic agent (in-depth presentation of this method and of the models developed on its basis was performed by Anghel [14]. The best known method from the specified category is the scores method. For variables taken into account are determined certain weights so that their sum reflects a global indicator called "The Z score". This method involves the building of a database with information on a group of bankrupted companies and a group of healthy companies that allow calculation of financial ratios for each entity subject to the analysis and the determination



of the best combination of rates that allow the differentiation of the companies analyzed. Basically, the indicator resulting (statistical discriminant model) reflect the overall situation of the company with manifest and predictability. One of the first score functions used in the analysis of default risk was developed by Altman in 1968, which allows the registration of a degree of predictability of 75% of bankruptcies two years prior to their production [15]. The model was further developed to be applied in all branches. Altman model is frequently used in financial practice and enable a correct the result in the classification of 70% [16].

It should be mentioned also other important models: the Conan – Holder model [17], the model of the Central Balances of the France Bank or the method of the French Commercial Credit. In the Romanian school, the possibility to determine this pattern was limited because the transition from the centralized economy to the market economy was quite large and the information required was not available or relevant. However, the significant concerns embodied in the formulation of the scoring models have many authors [18 -20, 14]. The application of scoring functions in the Romanian economy cannot yet be considered as a safe situation of risk management. We believe that the models that have demonstrated the applicability of the developed economies do not correspond to an economy characterized by high instability. In addition, the proper identification of the bankrupt companies, the long absence of the legislative provisions governing the bankruptcy, the lack of analysis of a wider range of firms before bankruptcy, focusing on financial variables without including non-financial indicators and trying to develop the models available in all branches reflect some of the aspects that require the completion of the risk management techniques based on a discriminant analysis with other possibilities.

## 7. Conclusions

The manifestation of risks in a higher or lower degree cannot be eliminated, regardless of the strategy used. However, in practice it has been shown that a potential risk with higher negative impact but which has been identified and controlled can cause fewer losses than a lower but uncontrolled risk. Therefore, a good manager should use a risk management strategy in order to enable the reduction or even avoidance of losses caused by their manifestation. A proactive risk management can generate durable benefits for the company, materialized wither in costs reduction or in improving or making internal processes efficient, or in canceling insurances expenses, which are not justified from economic point of view.

The problems presented in this work are due to identify the issues that highlight the importance of active risk management, to optimize the ratio of the risk level –the level of the profitability achieved, the need to monitor and update the information on risk and the possibility of realization, the role of risk management in identifying the opportunities of the business determines the highest level of profitability in accordance with the accepted risk

level and the amount of available resources, the proactive risk management capacity generates sustainable benefits for the company, resulting either in reducing the costs or to improve and streamline of the internal processes or the elimination of the insurance costs, economically unjustified, the need of training the decider as a person capable to take the increased costs due to the running of a business, whether to obtain a corresponding reduction in risk and thus of the losses that would be determined by their expression ; the attraction of the approach risk management to empiricism in the application of techniques with clear and measurable objectives.

The application of techniques and methods of risk management must be a starting point for substantiating and applying the company's financial strategy. The course of action must be related to identifying the elements that may cause the manifestation of risks, sizing the probability of their manifestation, forecasting channels of influence and establishing means of protection.

It is not advisable to use only statistical models to determine the financial status (statistics entails the use of previously recorded data, and the maintaining of a constant level of indicators calculated on their basis is unlikely in an environment subjected continuously to profound transformations at short time intervals) but is required their completion with analysis reported to financial equilibrium, level of profitability, the ability to pay, the changes in the financial flows so as to enable an evaluation of the global risk and to apply an optimal management of it.

Taking into consideration the issues presented in the paper it resulted: the importance of active risk management, to optimize the degree of risk assumed - the level of profitability achieved; the need to monitor and update the information on risk and the possibility of realization; the role of risk management in identifying business opportunities that lead to the highest level of return, consistent with accepted risk level and the amount of available resources; the capacity of proactive risk management to generate sustainable business benefits, materialized either by cost reduction or improvement and streamline of internal processes or the elimination of expenses with insurances, economically unjustified; the necessity to train the decision maker as a person able to undertake increasing the costs of running a business, whether obtaining a corresponding reduction in risk and thus of the losses that would be determined by their expression; attracting risk management from the area of the empiricism into that of a clear approach and the application of techniques with clear measurable objectives.

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