

# Risk Management at the Level of Agricultural Organizations

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## Abstract

In agriculture, as in other production branches of the economy, there businesses which have two main objectives: on short term – achieve profit and on long term – the viability of the company (economic growth and stability). Even if the risk management practice can vary from one company to another, some elements are common for the risk management programs. These are: mission identification, risk assessment and of the risk control uncertainty, risk financing, risk administration. In this study we identify the risk categories and we establish methods to prevent them. The studied organization has as activity object the cereals and technical plants culture.

**Keywords:** agriculture, cereals and technical pants , risk management

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## 1. Introduction

The achievement of company objectives means to know and to assume some multiple risks. The risk management process consists in three phases: risk identification, risk analysis and reaction at risk. The risk identification is realized by making several control lists, by organizing risk identification meetings and by analyzing the archived documents. [1] The risk analysis uses some methods like: determination of the expected value, Monte Carlo simulation and decision trees. The reaction at risk includes measures and actions to minimize, eliminate or distribute the risk. The achievement of the objectives and projects of a company involves the identification and management of multiple risks like: environmental or internal changes, establishing unrealistic strategies, errors and omissions in design and execution, etc. [2].

A risk is the uncertainty associated with any results. The uncertainty can refer to the probability that an event can occur or to the influence, to the effect of an event when it occurs. The risk occurs when [3]:

- The occurrence of an event is sure but its result is uncertain;
- The effect of an event is known but its occurrence is uncertain;
- Both the effect and the event occurrence are uncertain

## 2. Materials and methods

To realize this study we used the Altman model, but also the identification of risk categories and of the methods to prevent them. The study was realized in period 2009 – 2012. The Altman model is the most used in the developed countries in order to evaluate the active companies from the market economies. According to professor Altman, the decline of a company advances in five stages [4]:

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1. – the occurrence of the decline signs which are disregarded (decrease of profitability, decrease of the turnover, increase of the debts, decrease of the assets)
2. – the existence of the obvious signals for which the companies do not take any measure hoping that they will disappear without any intervention
3. – the strong action of the decline factors with serious decline of the financial situation
4. – the collapse, the management team is unable to provide corrective measures
5. – the intervention, either through recovery measures or by declaring the bankruptcy.

The function established by Altman is:

$$Z = 3,3x_1 + 1,0 x_2 + 0,6 x_3 + 1,4 x_4 + 1,2 x_5$$

where: [4]

x – represents the ratios involved in the analysis  
 3,3;1,0;0,6;1,4;1,2 – are weighting coefficients of the ratios

The ratios used in this model are:

$x_1$  = profit before taxes/total assets;

$x_2$  = sales/total assets

$x_3$  = market capitalization/loans

$x_4$  = reinvested profit / total assets

$x_5$  =assets/total assets

where:

market capitalization = market value of subscribed and paid capital

The values of the Altman model, according to which a company can be characterized, are:

-  $Z < 1,18$ , the company is insolvent in phase 4 and 5;

-  $1,18 < Z \leq 2,90$ , the company is in difficulty in phase 2 and 3;

-  $Z > 2,90$ , the company is healthy from economic point of view. [5],

### 3. Results and discussion

By applying the Altman model on SC Acgicom SRL, we notice the following aspects.

We notice that the company was in difficulty during the entire period of analysis, in 2010 and 2011 the bankruptcy was imminent and in 2012 the company is in difficulties.

The risk categories are: technical and technological risks, purchasing risks, economic risks, natural risks, financial risks.

**Table 1.** Altman model applied on

	2009	2010	2011	2012
X1	0.95	0.08	0.50	0.80
X2	0.99	0.18	0.57	0.74
X3	0	0	0	0
X4	0.35	0.03	0.18	0.29
X5	0.44	0.40	0.42	0.62
Z	2.74	0.69	1.67	2.45

#### The technical and technological risk.

This risk category occurs when during scientific projects. The technical risk is higher as the project is newer, from this category we can mention: the risk to not achieve the expected milk production, the risk not to fit in the specific consumptions, the risks of work accidents, the invisible technological risk (toxic, chemical). In order to prevent this risk it is necessary to use modern equipment, strict activity planning and a very good maintenance.

The purchasing risk is analyzed in relation with the suppliers meaning the concentration degree of the suppliers, the ratio of each supplier versus the total purchasing, the degree of dependence on the supplier, in order to minimize this risk is recommended to avoid the dependence on a single supplier.

#### The economic risk.

The economic risks are determined by the contextual evolutions of the company and by the quality of the economic activities of the company. In this category we have the economic risks, financial risks and commercial risks.

The economic risks are reflected on every decision made. The most frequent risks from this category are:

- the risk of inflation increase after joining the European Union, as a result of the prices tendency from the Romanian market to align with those from the common market. The consequence of this price increase could be the decrease of the purchasing power and implicitly the decrease of the decrease in sales of the high quality food.
- the risk of increasing the interest rates on loans;
- the risk of fluctuations in the exchange rate. By appreciating the local currency versus the reference currencies, the local products will become more expensive and the imported ones will be cheaper becoming more competitive versus the local ones.

- the risk of economic exploitation related to the profitability. This risk can have multiple causes beginning with losing the market share favoring the completion of the producers from the European Union and finishing with the change of the consumers' behavior.
- the investment risk. In the case of food producers this risk can take the form of a wrong vision of the development possibilities as a result of misunderstanding of the economic reality.

#### Financial risks.

These are related to obtaining and using borrowed and own capital and the most frequent are:

- the risk of remaining without assets, reflected by the variability of the financial results indicators influenced by the company's financial structure;
- the risk of not realizing profit as an effect of the bankruptcy and high expenses;
- the risk of excessive debt;
- the risk of loan can occur from different transactions made by the company with its partners which can become unable or less able to fulfill the contractual obligations.

The financial risks are in general a consequence of the economic risks like many products on stock or many investments which pays.

#### The natural risks.

The natural factors don't affect directly the food industry, but the damage produced by different extreme phenomenon like long drought, flood, hail and extreme temperatures on the main supply source which is agricultural production, the negative effects are reflected in the distribution chain of the agricultural products. A lower agricultural production then the planned one can have as effect lower incomes in the food industry even if the prices are high. In Romania, the natural risks are very high due to the variation of drought periods and floods. Other natural risk factors which can affect the food sector are the biological ones: insects, rodents, viruses, bacteria which can affect the food product in any stage of processing and in order to minimize these risks the producers have to insure the agricultural production against natural calamities and to prevent the pests by using specific products.

In order to identify the strength, weaknesses, threats and opportunities, we used the SWOT analysis and the results are presented in table 2.

Table 2. SWOT analysis

Strength	Weaknesses
During the entire period the company had profit	Problems related to assets
The main activity is cereal and crops culture for which there is demand on the domestic market	Lack of irrigation systems
Opportunities	Threats
The possibility to access structural funds	Natural factors
Possibility to integrate in the rest of the chain	Juridical factors related to granting the subventions for
Possibility to change on bio products	agriculture
	The strong foreign competitors

#### 4. Conclusions

During the entire period the company had profit.

In 2010 and 2011 the bankruptcy was imminent and in 2012 the company was in difficulty.

The identified risk categories are: technical and technological risks, purchasing risks, economic risks, natural risks and financial risks.

The economic risks have effect on every decision. The most frequent risks from this category are: the risk of inflation increase, the risk of interest rates increase for loans, the risk of exchange rates variations, the risk of economic exploitation related to the profitability degree.

In Romania the natural risks are very high due to the variation of drought periods and floods. Other natural risk factors are the biological ones: insects, rodents, viruses, bacteria which can affect the food product in any stage of processing.

The financial risks are related to obtaining and using borrowed and own capital and the most frequent ones are: the risk of remaining without assets, the risk of not achieving profit, as an effect of bankruptcy and high expenses, the risk of loans. The financial risks are in general a consequence of the economic risks like having many products on stock or making investments which pays.

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