Professor Camelia RATIU-SUCIU, PhD
Department of Economic Efficiency
The Bucharest Academy of Economic Studies

MATHEMATICAL INTERDEPENDENCES IN MANAGERIAL DECISION-MAKING FOR BUSINESS DEVELOPMENT

Abstract. *The management processes essence consists in making and applying decisions found in the forecasting, organizing, coordinating, training and control-evaluating functions.*

In the competing economy, business is a very complex decisional act, with high implications and risks for the enterprising business men.

A mode of structuring the complex problems is their modeling. We refer to the informatic products WINQSB Microsoft Project and @ Risk.

Finally, a business cash-flow projection as a practical method for a business scientific management and Business-Intelligence as a trend of a successful business management, are presented.

Key words: *managerial decision, business, Markov model, Holt-Winters model, fuzzy model, WINQSB, Microsoft project, @Risk, business cash-flow, controlling, Business Intelligence.*

JEL Classification: C53, C88, L21

The conversational system dialogue, that designates at present the management activity, performed by informatic products frequently used in the learning process, allows the self-training and, at the same time, the examination of the specialists' analyzing and synthesizing capability. This is a method of training the specialists for the near future, when we shall frequently work with management intelligent systems which stimulate the creativity and where the decision can be analyzed as a process of reducing the risk, because a large amount of information, experiences and validated ideas coming from different sources and which can be used practically, is stored.

The essence of the management problems is to adopt and apply the decisions found into the forecasting, organizing, managing, training and controlling-evaluating functions. [1,2,3,4]

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[1] Schierenbeck H.(2003), Grundzüge der BWL, 16. Auflage Oldenbourg;
[2] Wöhe, G., Döring, U.(2008), Einführung in die Allgemeine BWL, 23. Auflage, Verlag Franz Vahlen, München;

The functions are taken by managers in several fields of the organization, identified by: commercial management, research – development management, production management, financial and human resources management, whose correlation and working make changes into the components of the management system[5].

The decision is considered the central point of the management activity, as it is found in all the functions of the management process [6].

The economic practice requires a scientific substantiation of the decision, namely, it to be taken according to the organization realities, on the basis of scientific tools, avoiding the routine, voluntarism, improvisation, intuition [7,8,9].

The competing economy permanently requires developments and modernizations within the organization.

What is a business?

It represents any undertaker's initiative, usually put into practice by means of a contractual relationship, with a well-specified economic-financial purposefulness.

Business is generally, a very complex act, with high implications and risks.

The managerial working instrument used is the *business plan* that starting from the identification of an economic opportunity, the objectives to be achieved are determined, the main resources and required activities are adjusted and structured and it is proved that business is profitable and deserves to be supported by potential stakeholders .[10,11]

The business plan is an acting scheme , logically constructed , supposing a long-run thinking related to the respective business.

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[3] Thommen Jean-Paul, Achleitner Ann-Kristin (2006), Allgemeine Betriebswirtschaftslehre 5. Auflage Umfassende Einführung aus management – orientierter Sicht – Gabler Verlag, Wiesbaden;

[4] Rahn, H.J. (2008), Unternehmensführung 7. Auflage. Ludwigshafen/Rhein.

[5] Burdus, E. (2005), Tratat de management, Economica Publishing House;

[6] Scherm Ewald, Pietsch Gotthard (2007), Organisation. Theorie. Gestaltung. Wandel Oldenbourg Verlag, München, Wien.

[7] James A.F., Stoner, R, Freeman, E. (1992), Management, Prentice Hall, Englewood Cliffs, New Jersey;

[8] Haag, S., Cummings M., Dawkins, J. (1998), Management Information Systems for the Information Age, Irwin McGraw-Hill;

[9] Ratiu Suciu Camelia (2005), Modelarea si simularea proceselor economice. 4-th Edition, Economica Publishing House;

[10] Nicolescu, O. (2001), Managementul intreprinderilor mici si mijlocii. Economica Publishing House, Bucuresti;

[11] Nicolescu, O., Plumb, I. et al (2003), Abordari moderne in managementul si economia organizatiei, vol. 1, Managementul general al organizatiei, Economica Publishing House, Bucuresti;

Mainly, it fulfills three functions, namely: it identifies the most efficient solutions and financing possibilities, represents the basis of managing the new business and estimates the changes to be made within the enterprise.

In order to follow the idea that " in business there are only winners", the efforts are focused and the available resources are attracted in order to reach the undertaker's proposed objectives. In this way, this economic problem becomes complex.

A mode of structuring the complex problems is their modeling, namely their abstract representation.

In order to construct an economic model, a careful analysis is required to identifying the essential and representative characteristics of the modeled process, with respect to an explicative economic theory of that process. If this theory is finalized by a logical and mathematical formalization , an economic-mathematical model results.

The necessary requirements [12] for an economic-mathematical model are:

∗ to be representative;

∗ to have a cognitive and applicative value;

∗ to be easily adjusted to environment changes or to process evolution;

∗ to be flexible to other criteria combination than the economic, political, social ones;

∗ to be valid;

∗ to be solvable by using the existent computing technique.

Business market definition

For any business plan, the market definition is the most important component and at the same time, very difficult to be worked out. [13,14]

Markov chains can be applied to establishing the weight evolving mode of certain competing products.

Any Markov chain is defined by its stochastic matrix M and by the initial distribution (a_0).

We consider a set of independent possible results E_1, E_2 ….(of finite or infinite number).

A probability p_k is associated to each result. The probability of a sequence of results is defined by the following multiplicative property:

[12] Zimmermann, H.J. (2005), O.R. Methoden und Modelle für Wirtschaftsingeneure, Betriebswirte und Informatiker, Vieweg&Sohn Verlag, Wiesbaden;

[13] Homburg Christian, Krohmer Harley (2003), Marketingmanagement – Strategie – Instrumente – Umsetzung, Unternehmensführung. Gabler Verlag, Wiesbaden;

[14] Fein, E., Müller, R. (2007), BWL für technische Berufe 4. Auflage, Verlag Europa, Haan – Gruiten;

$$P_r(E_{jo}, E_{j1}, \ldots, E_{jk}, \ldots, E_{jn}) = p_{jo} \times p_{j1} \times \ldots \times p_{jn}$$

The conditioned probability p_{jk} is associated to each pair E_j , E_k , namely, if E_j is fulfilled, the probability to fulfill E_k is p_{jk}.

The probability of the E_j result of the initial try is a_j. The conditioned probability is, in fact, the probability of passing from state $E_j \rightarrow E_k$ represented under the form of square matrices with all the non-negative elements and with the property that the sum of the elements of the same line is equal to 1.

Starting from the market share of certain competitive products at a given moment (a_0) and from the results of a market survey that shows the consumers' constancy against a product and/or their desire to other products (the stochastic matrix M is constructed with these elements) we can notice the evolution in time of products (a_1 ; a_2 ; a_3 ; ... a_n)

a_0 = (0.5; 0.35; 0.15)

M =

t \ t+1	A_1	A_2	A_3
A_1	0.6	0.2	0.2
A_2	0.15	0.7	0.15
A_3	0.05	0.15	0.8

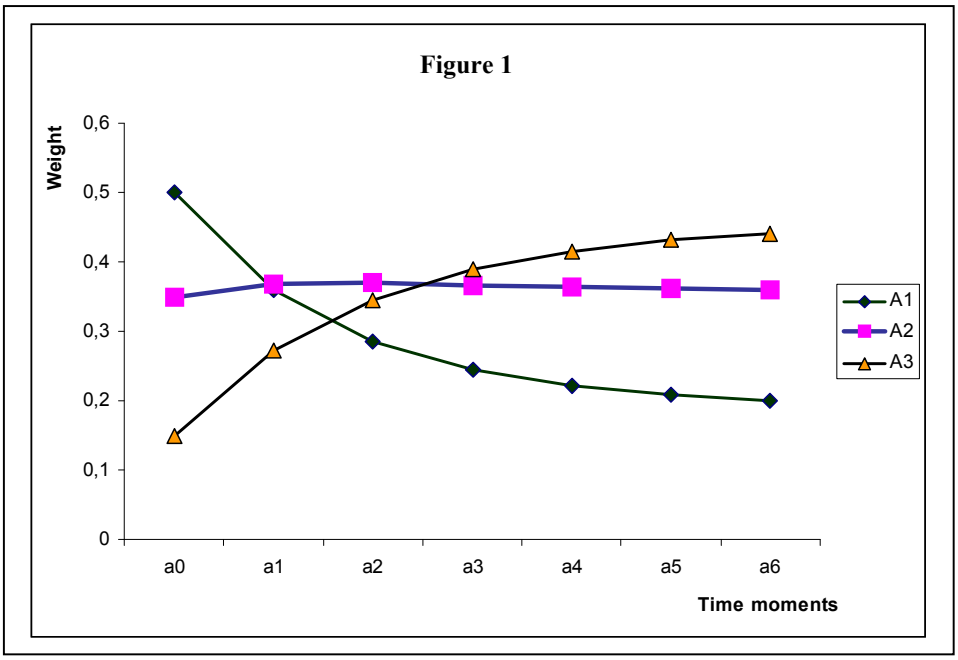
$$a_0 \cdot M = a_1 \; ; \; a_1 \cdot M = a_2 ; a_2 \cdot M = a_3 ; \; .... \; a_5 \cdot M = a_6$$

The results of the matrix calculation are presented in Table 1.

Table 1

	a_0	a_1	a_2	a_3	a_4	a_5	a_6
A_1	0.5	0.36	0.285	0.244	0.221	0.208	0.2
A_2	0.35	0.368	0.37	0.367	0.364	0.361	0.359
A_3	0.15	0.272	0.345	0.389	0.415	0.431	0.441

We can make the analysis of each product evolution, by relating these results to the products life curve and the following conclusions can be obtained as regards the managerial policy and/or the product marketing (Figure 1).



The chosen marketing strategy will depend upon the market position: leader, challenger, market niche etc.

A market leader's options to defining his marketing strategies are:

∗ expanding the market by finding product new users; finding product new destinations, increasing the product using frequency;

∗ protecting the gained position;

∗ increasing the market share.

In case of a small or medium firms, we recommend generally niche strategies (a small market segment for which a certain product/service is very well adjusted).

Methods of product sell forecasting

Exponential smoothing method (Brown's model)

The basic idea of this method consists in correcting the forecasting proportionally to the noticed deviation, between the previous forecasts and their fulfillment, each deviation being weighted geometrically decreasing, as it moves away from the present.

We set the phenomenon membership to one of the four types of possible evolutions: horizontal (characterized by mean), with trend (characterized by mean and

line slope), seasonal (characterized by mean and seasonality index) and trending seasonal (characterized by mean, seasonality index and line slope).

We call primary exponential smoothing when we work with a single smoothing factor ($0 \le \alpha \le 1$) and secondary exponential smoothing when we have in view the seasonality and trend of a phenomenon.

The relation of forecasting sells at the end of period t for the next period $(t + 1)$ can be written under the form:

$$F_{t+1} = F_t + \alpha (Y_t - F_t)$$

Y_t is the data series and α the primary smoothing factor.

Holt – Winters Model[15]

This model is used when there is a seasonal profile and a long – run trend for the dynamic series.

According to the seasonality type, the multiplicative model (HWM) and the additive model (HWA) exist.

In the *additive case,* the seasonal fluctuations are not proportional to the values of the data series (series trend).

In the *multiplicative case*, the seasonal fluctuations value depends on the series trend.

The equations of the multiplicative Holt – Winters algorithm

∗ Continuous component smoothing

$$F(t) = \alpha \frac{x(t)}{S(t-c)} + (1-\alpha)\left[F_{t-1} + T_{t-1}\right]$$

where: $F(t)$ is the value smoothed to t moment, regardless the seasonality;

$x(t)$ - the sells value at $t = 1,2, \ldots, T$ moment;

$S(t - c)$ - seasonal factor at t – c moment , c = seasonality cycle length;

$T(t - 1)$ – trend level at $(t - 1)$ moment.

In order to get a forecasting, regardless the seasonality, the effective sells of the period are taken into consideration regardless the seasonality:

$$\left(\frac{x_t}{S(t-c)}\right)$$

∗ Trend factor smoothing

$$T_{(t)} = \beta\left[F_t - F_{t-1}\right] + \left(1-\beta\right)T_{t-1}$$

$$0 \le \beta \le 1$$

[15] Schira Josef (2005), Statistische Methoden der VWL und BWL 2. Auflage, Pearson Studium, München;

* Seasonal factor smoothing

$$S_t = \gamma \frac{x(t)}{F(t)} + (1-\gamma) S_{t-c}$$

$0 \le \gamma \le 1$

$S(t)$ – seasonal factor at t moment

The forecasting for the next period is calculated as follows:

$F_{(t+h)} = [F(t) + hT(t)] S(t+h-c)$, where $h = 1,2,...,c$

$F_{(t+h)} = [F(t) + hT(t)] S(t+h-2c)$, where $h = c+1, c+2,...,2c$

$F_{(t+h)} = [F(t) + hT(t)] S(t+h-3c)$, where $h = 2c+1, 2c+2,...,3c$

h = the number of the forecasting periods;

$F(t + h)$ = forecast performed at t moment for sells of $(t+h)$.

The initial values are $F(0) = m$, $T(0) = 0$, $S(t) = X_{(t)}/m$ for $t = 1, \ldots, 4$ and m is the mean for the first cycle from $t = 1$ to $c = 4$.

Practical cases solving can be done by using the informatic product WINQSB. [16] . The following steps must be followed:

- Forecasting and Linear Regression model is used;
- Time Series Forecasting is chosen as forecasting problem type;
- Problem title, working time unit, past data number are provided;
- Multiplicative Holt – Winters Algorithm (HWM) is selected;
- Working mode is chosen;
- Initial data: forecasting periods number, seasonality cycle length, values for α, β, γ , initial value corresponding to the first forecasting, initial smoothing value are defined;
- Solve and Analyze, Perform Forecasting, Eventual Results, one of the options: Show Forecasting, Summary, Show Forecasting Detail, Show Forecasting in Graph are selected.

The quality and accuracy of a forecasting is performed with the aid of the indicators: Mean of Absolute Deviations (MAD) and Mean of Square Errors (MSE). In order to substantiate a decision on the basis of a forecasting, we shall select the forecasting for which the mean of the absolute deviations is minimum.

MSE penalizes the forecasting big errors. This indicator is effective in fields where these errors can have undesired consequences.

[16] Lawrence, J.A. Jr., Pasternak, B.A. (1998) , Applied Management Science. A Computer – Integrated Approach for Decision Making; Ed. John Wiley & Sons, Inc.;

We generate by simulation, several combinations of the smoothing constants α, β, γ. MSE is evaluated for each combination. The difference between the forecasted values and the current values are due to certain random variations or to a tendency of the forecasted values to be positioned higher or lower the current values of the data series (known in the literature of specialty under the name of "forecast bias")[17].

We can not make changes in the random variation but the tendency of the forecasted values can be corrected with the tracking signal .

$$\text{Tracking signal} = \frac{\sum(\textit{current value} - \textit{forecasted value})}{MAD}$$

When we make a decision related to a forecasting accuracy, the values of the tracking signal are compared to experience-based pre-established/established limits.

In case when the value of the tracking signal oversteps the pre-established limit, the forecasting is going to be reconsidered and corrected [17].

Business optimal variant selection of more possible alternatives

In case when the managerial team has more variants to analyze, according to certain criteria with different decision-making consequences, the fuzzy sets theory allows us to determine the membership of a variant to the optimal variant.

The fuzzy type model[18] will help us to avoid the imprecision effects and to make the right decision.

We consider $V_i = \{V_1, V_2, ..., V_i, ..., V_m\}$ a set of alternative variants and $C_j = \{C_1, C_2, ..., C_j, ..., C_n\}$ a set of criteria , which are generally technical-economic indicators laying at the basis of decision-making.

We consider V_1 - the variant whose utility is 1 (maximum) and V_0 - the variant whose utility is 0 (minimum).

We denote by:

a_{1j} – the most variable consequence of C_j criterion;

a_{ij} – consequence of a certain variant V_i of C_j criterion;

z_{ij} – membership of a variant V_i, according to j criterion, as against the optimal variant.

In case of C_j criterion, the degree of approximation plus the distance of a variant V_i as against the best variant V_1 is equal to 1.

$$x_{ij} + x_{ij}^* = 1$$

[17] Reid, D., Sanders, N. (2005), Operations Management, An Integrated Approach, Chapter 8 Forecasting, John Wiley & Sons, Inc., Second Edition;

[18] Ionescu, Gh., Cazan, E., Negruta, A. (1999), Modelarea si optimizarea deciziilor manageriale, Dacia Publishing House, Cluj-Napoca;

where:

x_{ij} = degree of approximation of V_i variant in case of j criterion, as against the best variant;

x_{ij}^* = distance of V_i variant in case of j criterion, as against the best variant.

The degree of approximation, respectively of distance is different, according to criterion nature. For the criteria where $a_{ij} = \max(a_{ij})$ for $i = 1,$ namely the maximum consequence is the most favorable one, the degrees of approximations, respectively of distance are calculated as follows:

$$x_{ij} = a_{ij} / a_{1j} \text{ for } \begin{matrix} i = \overline{1,m} \\ j = \overline{1,n} \end{matrix}$$

$$x_{ij}^* = 1 - x_{ij} = (a_{1j} - a_{ij}) / a_{1j} \text{ for } i = \overline{1,m};\ j = \overline{1,n}$$

For the criteria where $a_{ij} = \min(a_{ij})$ for $i = 1,m,$ namely, the minimum consequence is the most favorable one, the calculations are:

$$x_{ij} = a_{1j} / a_{ij} \text{ for } \begin{matrix} i = \overline{1,m} \\ j = \overline{1,n} \end{matrix}$$

$$x_{ij}^* = 1 - x_{ij} = (a_{ij} - a_{1j}) / a_{ij} \text{ for } i = \overline{1,m};\ j = \overline{1,n}$$

According to these degrees of approximation/distance, we can set a utility value for each variant and each criterion, which will lead to setting the variant having the *highest membership degree* to the optimal variant. These membership degrees will be used for the model of optimizing the decisions and will be denoted by e^x and e^{-x} function.

If $z_{ij} = e^x$, where $x = x_{ij}k_j$, for $i = \overline{1,m}$, $j = \overline{1,n}$, it follows that $z_{ij} = e^{x_{ij}k_j}$, where k_j is the importance coefficient of C_j criterion. Obviously, $z_{ij} > 1$, consequently, the membership degree is not upper bounded.

If $z_{ij} = e^{-x}$, where $x = x_{ij}k_j$ for $i = \overline{1,m}, \quad j = \overline{1,n}$ it follows that $z_{ij} = e^{-x_{ij}k_j}$.

The value of the membership degree is between 0 and 1 $(0 < z_{ij} < 1)$.

After setting the membership degrees, we apply the decision-making criteria under uncertainty conditions. As the decision to be substantiated is a complex one, with multiple implications upon the firm's activity, by knowing and using such criteria we contribute to providing the quality corresponding to the decisional process.

Business activities programming and monitoring

A business performed in small, medium or large organizations can be assimilated to a project, as it is developing in time, and it is made of logically and technologically conditioned activities[19,20] , it consumes material, human and financial resources.

Microsoft Project[21] is a support informatic product for projects management. By using this product we can:

- to determine the critical path;
- to take into consideration a special working program, to break an activity and to retake it, the over-time work length;
- dead-line terms for certain activities;
- to set the recurrent number activities;
- to adjust the working time to certain individual activities;
- to update permanently the information related to project.

Microsoft Project works with two types of resources, namely: working resources (human and equipments), and material resources.

Resources availability determines their use on activities and the costs are related to the required financial resources for achieving the proposed objectives.

Microsoft Project allows:

- to adjust the working time for the human resources, namely a flexible working program is set for each resource;
- to store the additional information about resources;
- to introduce the consumption control for material resources (it can be fixed or variable);
- to specify the resource maximum capacity to achieving the activities (we can have different maximum capacities for distinct time periods);
- resources allocation.

The resources can be sub-allocated , completely or over-allocated (the mode of resource allocation exceeds its maximum capacity).

The project cost is an essential analyzing element. According to it, we specify the cost rates for each used resource, we examine the costs on activities, we make an analysis of the total costs and we make reports for project cost control.

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[19] Thommen Jean-Paul, Achleitner Ann Kristin (2006), Allgemeine BWL. 5. Auflage, Gabler Verlag, Wiesbaden;

[20] Olfer K., Rahn, H.J. (2008), Einführung in die BWL; 9. Auflage, Kiehl Verlag, Ludwigshafen;

[21] Chatfield C., Johnson, T, Microsoft Office Project 2003, Step by Step, Microsoft Press, Washington, 2004;

There are six categories of reports: Current Activities, Overviews Reports, Workload Reports, Assignment Reports, Cost Reports and Custom Reports.

The use of an application as Microsoft Project allows:

- due time processing of all activities , time, project required resources
- logically scheduling the activities and resources;
- analyzing the project achievement stage in any specified time moment;
- communication of information to stakeholders through internet and intranet.

By using the critical path calculation, when a new business is having in view, we can determine the possible minimum time length of its achievement, resources use, corresponding cost.

The method allows monitoring the business development, up-dating the time periods, cost and/or interacting.

Business managerial risk

Business being a management activity includes risks with an appropriate management[22,23] .

The risk state is that state where, with a mathematical probability, we can determine the evolution of some economic phenomena, influence of certain factors and their possible effects. Usually, we have in view the anticipated consequences of such actions or events. Risk supposes the manifestation of certain deviations from the proposed levels with a certain probability (Figure 2).

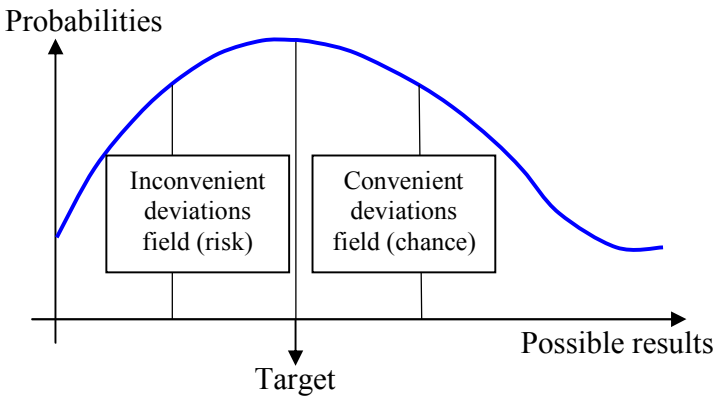

Figure 2

[22] Neus Werner (2007), Einführung in die BWL 5. Auflage – Mohr Siebeck

[23] Thommen Jean – Paul, Achleitner Ann – Kristin (2006), Allgemeine BWL 5. Auflage Gabler Verlag, Wiesbaden

As it can be noticed in Figure 2, risk distribution follows a normal law, high losses show a low appearance probability and low losses show a high appearance probability. In any business , the appearance of unpredictable risk situations can occur, related to the used resources, costs and/or its achieving time length.

The @ Risk for Project[24] informatic product allows the achievement of a plan rather flexible to the modifications which could occur during the business development and applies to sensitivity analysis and scenarios analysis. It adds over 37 probability distribution functions to Microsoft Project program. In order to perform risk analysis, Monte Carlo simulation technique is used.

The sensitivity analysis identifies those input data having the highest impact upon simulation results and ranks them according to their importance; it is applied to the probability distributions which describe business uncertain variables.

Scenario analysis identifies the situations which could lead to obtaining the expected incomes or to those unexpected ones and measures the influence of the input variable upon the output variable.

"Scenario" analysis allows to determine that input variable that significantly contributes to reaching a purpose.

@ Risk for Project does not eliminate the risks associated to a certain complex project, but have the necessary tools for the best decisions in order to schedule the business activities, when delays, unexpected costs or other deviations could occur.

The human resource plays an important role in a business[25].

"Ignored risks" given by the difference between the subjective risk and the real existent risk , can occur in the human resources management.

The management of the "ignored risks" is required to be achieved because otherwise we could make wrong decisions in solving the problems and thus we can not avoid the risks (Figure 3).

[24] Palisade Corporation, Guide to using @ Risk, Risk Analysis and Simulation Add-infor Microsoft Excel, Windows, Version 2001, www. Palisade.com

[25] Lutz von Rosenstiel (2007), Grundlagen der Organisationspsychologie 6.Auflage-Schäffer Poeschel Verlag, Stuttgart

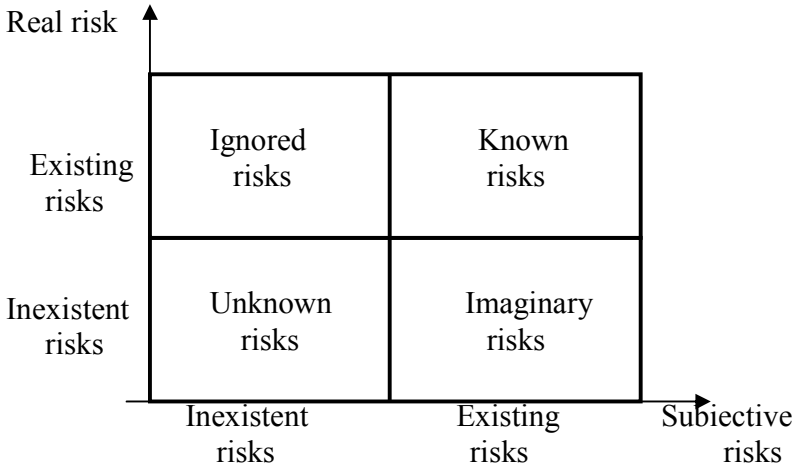

Figure 3

In the field of human resources, both the staff and the management are, on one side, the risk factors, and on the other side, they have to endure the risk effects. By combing different approaching ways, we obtain a risk field structuring. (Figure 4) [26]

Risk evaluation mode	Risk evaluation	
	At personnel level	At the level of human resources
Causal orientation	Risks caused by personnel	Risks caused by personnel management
Functional orientation	Risks for personnel	Risk for human resources management
Managerial orientation	Solving the risks with the aid of the personnel	Solving the risks with the aid Human resources management

Figure 4

Personnel management risks are related to the decision-maker, with implications upon the personnel, i.e. the objectives established by personnel policy not to be achieved. Here we mention the risks resulted from the forecasting of personnel

[26] Ackermann, K.F. (1999), Risikomanagement im Personalbereich, Gabler Verlag

employment, required labor force planning, personnel development. The Monte Carlo simulation can be used in order to forecasting the labor force training expenses, to substantiating the decisions and to diminishing the risk in the field of human resources.

Business cash-flow projection

Business cash-flow shows the cash-flow excess/deficit that characterizes the business during the forecasted period, namely, the firm capacity to cope with the financing cost (credit returning and interest payment)[27]. The indicators providing the evolution of up-dated cash-flows are:

- up-dated total incomes, up-dated expenses and the relation between up-dated incomes and expenses;
- up-dated profit (VAN) outlines the total up-dated profit obtained during the whole period of modernization and development forecasted in the business plan

$$VAN = \sum_{h=1}^{p} V_h \frac{1}{(1+a)^h} - \sum_{h=1}^{p} \left(I_h + C_h \frac{1}{(1+a)^h} \right)$$

where:

V_h - business annual incomes

I_h - annual investment

C_h - annual operation expenses

D - business operation time length

- the internal rate of financial profitability (RIRF) shows the level of the discounting rate where the income up-dated values are equal to the up-dated values of the business total expenses (investments, operation costs)

$$RIRF = a_{\min} + (a_{\max} - a_{\min}) \frac{VAN_+}{VAN_+ + VAN_-}$$

where:

$a_{\min}$ – up-dating rate where VAN has positive values

$a_{\max}$ – up-dating rate where VAN has negative values

VAN_+ – up-dated profit for $a_{\min}$

VAN_- – up-dated profit for $a_{\max}$.

For the existing organizations, the financial plan provides a complete image of the business, as an analysis of the past and present and a future forecasting.

[27] Götze Uwe (2008), Investitionsrechnung 6. Auflage, Springer Verlag, Berlin

In case of a newly created organization, an advantageous perspective is provided for the financial plan. We can achieve a forecasting based on the most probable working hypothesis and a forecasting based on using the whole business potential, optimistic/pessimistic approach.

Regardless the business type, it is necessary that certain information to be conventionally presented, in order to provide the business compatibility in time and space.

Controlling – practical method for business strategic and tactical management

Controlling is the business management with the aid of deviations analysis, which, in a subsequent stage, are transmitted to all fields of the decision-making process [28,29].

In fact, controlling signals in due time the disturbing factors and allows to adjust the business activities; for short-run period, increases the undertaker's reacting capacity and for long-run periods, it supplies a higher adjusting capacity (it is surnamed "business seismograph")[30,31]

A successful controlling requires the existence of a large up-dated informational base that to provide flexibility for the decision-making process through a fast adjustment to the ever going exchange conditions of the market.

The strategic management and controlling are , at present, the fundamental problems of firm management.

Business Intelligence – tendency of business profitable management

Business Intelligence is the solution for those people who want to run their business in the conditions of maximum efficiency and profitableness [32].

Business intelligence transforms the IT investments into managerial language, in other words, it is the translator between the IT high technical level and business level.

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[28] Ziegenbein K. (2007), Controlling, 9.Auflage, Ludwigshafen/Rhein

[29] H.U.Küpper (2005), Controlling, 4. Auflage, Stuttgart

[30] Ratiu Suciu-Camelia (2000), Managementul sistemelor dinamice, Economica Publishing house

[31] Andreas Preiβner (2003),), Praxiswissen Controlling. Neu mit Risikocontrolling 3. erweiterte Auflage, Carl Hauser Verlag, München, Wien

[32] www. SIVECO. Ro – Siveco Business Analyzer – analysis, reports, forecasting and tendencies

The Business Intelligence solutions offers an access to information structured into suggestive tables and graphs, easily to be interpreted, indicators of real performances based on current data, supplying rapid, coherent, long-run impact decisions.

As every business is unique, also the rules and processes, according to which a business is developed, have a specific character. Investment in Business Intelligence is expensive, accordingly, the solution acquisition can be done gradually, at first, the reporting parts, and lately the analyzing part.

Business Intelligence is a modern concept that, at present, dictates the working way of the organizations all over the world, in the conditions of a performant management.

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