The Impact of the New Information and Communication Technologies on the Performance Control Indicators System

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Abstract. Our paper emphasizes the way in which the information and communication technologies offer a real support to the managers which have a global vision on the key factors that assure business performances. The simulation of a Total Performance Scorecard reveals the advantages and opportunities of the software - Balanced Scorecard Designer in the determination of the project efficiency, based on four integrated dimensions: financial perspective, customers' perspective, internal business perspective and organizational learning.

Keywords: Balanced Scorecard, performance control, strategy, organizational learning

1. Introduction

General considerations concerning the design of a performance control system (Balanced Scorecard)
The global economy enters in a new era, in which the new information and communication technologies accelerate the companies' expansion in e-business, modifying the components of competitiveness and management performances. The strategic goals of the organizations like the business processes are influenced by significant changes, which determine the necessity to implement a performance control system.

Performance control provides to the top-management information concerning the business vision and supports the strategic and tactic decision making process. The performance control function creates the framework for the planning, budgeting and monitoring the performance in all its departments. In the same time, it assures the adequate usage and the traceability of company's resources, determining transparency in decisions and contributing in this way to the profitability increase.

The **Balanced Scorecard** represents a set of indicators that assures a unitary presentation of the management vision regarding the performance control and supposes the relational approach on **four dimensions**: *financial perspective, customers' perspective, internal business processes* and *organizational learning and growth perspective.* In the design and the implementation of a performance control management system – especially when we take into account the information system – the aspects concerning the definition of goals and the setting of the results measurement become essentials. There aren't methodologies generally accepted for the automation of a performance control project, but the practice of the companies reveals **six stages** (figure no. 1)
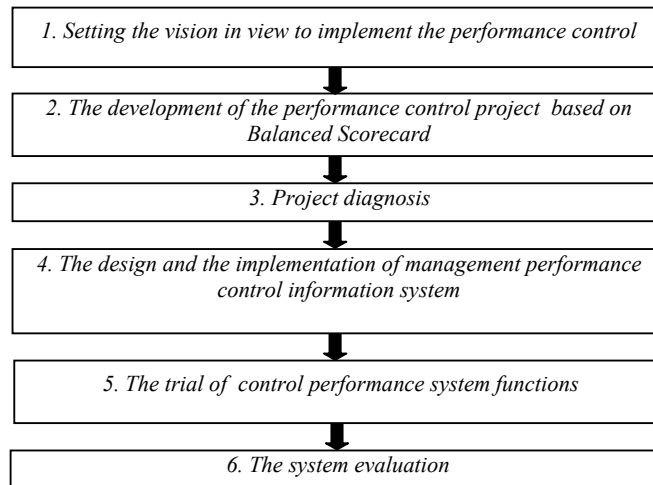
1. Setting the vision in view to implement the performance control

2. The development of the performance control project based on Balanced Scorecard

3. Project diagnosis

4. The design and the implementation of management performance control information system

5. The trial of control performance system functions

6. The system evaluation

Figure 1. The stages concerning the performance control management approach

In the following, we will present the main characteristics of each stage.

1. The setting of the vision in view to implement the performance control
A project focalized on the implementation of the performance control requires the top-management support of the company that launches the initiative of a Balanced Scorecard. In this first stage, the managers investigate the way in which the company should develop its activities without a performance management system.

2. The development of the performance control project based on Balanced Scorecard
In this stage, the project manager has the responsibility to build the team which will participate to the project and to set the performance indicators that will be measured. The strategic management system must concentrate on the success key indicators.

3. Project diagnosis
On the basis of performance criteria, the project manager realizes a detailed analysis of the strategic aspects that will be processed in the information system. He will emphasize the aspects that cause low performance (inefficient workflows, high level of costs, the lack of the added value for customers due to an inefficient service or customer care etc). Performance indicators are created in order to set the targets and to measure the results in the critical factors of the strategy. Balanced Scorecard is a useful tool for the strategic planning and the implementation of performance control evaluation system.

4. The design and the implementation of management performance control information system
Defined as a set of actions in which analysts, information system designers, users and beneficiaries are involved; the project concerning the implementation of the information system – support for performance control management needs an approach in a structured and formalized framework that describes the operations development and the role of specialists, making possible the participation of all the partners to the final objective setting, by means of a common language and rules for the Balanced Scorecard.

5. The trial of control performance system functions
The use of the information technology as a support which helps to the implementation of the methods and techniques referring to global performance evaluation by Balanced Scorecard is one of the steps focalized on the performance control reengineering. Depending on the change situation, the existent system can be just modified or replaced.

6. The system evaluation

The processes identified and implemented must be updated in view to evaluate the global performance. This approach supposes an iterative process, in which the new processes are used like entry data for the next stage of the performance control system.

2. The simulation of performance control system with Balanced Scorecard Designer software

Balanced Scorecard Designer is software realized by AKS LABS that simplifies the processes referring to the creation and the management of the Balanced Scorecard. It provides reports characterized by a set of measures linked to the organizational performance. The managers can be informed quickly when the business performance doesn't correspond to their expectations.

The selection of performance control indicators focuses on a set of "strategic objectives" associated to a "strategy map". The managers should identify the goals they have in each perspective of the Balanced Scorecard and must prove the relationships by means of the network links discovery. Arriving to a consensus in what concerns the goals and the inter-relationships, the Balanced Scorecard measures are conceived by the selection of the appropriate indicators. In view to emphasize the performance control automation techniques, we built a Balanced Scorecard that will allow the determination of a sales project performance.

The indicators system used for the simulation of the Balanced Scorecard is represented in figure no. 2.
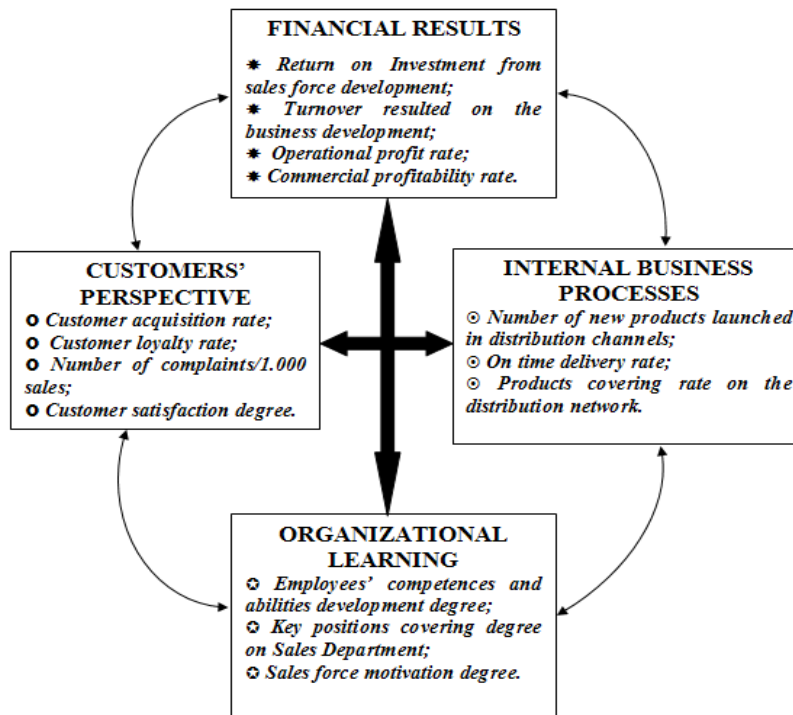

Figure 2. Indicators system for the balanced Scorecard simulation in the case of a sales improvement project

The users of this software dispose of capabilities concerning the creation of indicators system for performance control, the definition of a decision tree which implies relationships between the dimensions of the Balanced Scorecard. It also provides a flexible support for the

measurement of performance control indicators, based on certain target values settled by the decider.

The software allows the creation of a set of key indicators that can be distributed in several categories; each category and each goal defined by the decider receives weights, in function of their importance. For each indicator the decider settles a minimum and maximum value in order to help the optimization strategy to determine the calculation of the indicators associated to the performance control.

Because the sum of the Balanced Scorecard dimensions weights must be equal to 10, we suppose that the company's manager which implements the performance management system allocates the **value 3** to the dimensions: **financial results** and **customers' perspective** (these perspectives are considered to be the most important in the manager's vision and have the greatest impact on the performances) and **value 2** to the other two dimensions: **internal business processes** and **organizational learning**.

The decider must introduce for each indicator the real value, that will be quantified in the Balanced Scorecard, based on an optimization function which requires a lag between a minimal and maximal values. The optimization lags and the real value for the indicators associated to the **Financial results** dimension are presented in the table no. 1

Table 1. Indicators associated to the Financial results dimension

Indicators	Real value	Minimal value	Maximal value	Weight
Return on Investment from sales force development (%)	**165**	110	180	**3**
Turnover resulted on the business development (mil. EUR)	**435**	320	500	**2**
Operational profit rate (%)	**17**	10	20	**3**
Commercial profitability rate (%)	**38**	20	50	**2**

The sum of the weights allocated to each dimension indicators from the decision tree which reflects the Balanced Scorecard must be equal to 10. The minimal respectively the maximal values are planned by the manager before the implementation of the project.

The optimization function implemented in Balanced Scorecard Designer emphasizes the manner in which each indicator contributes to the global performance of the project and depends on the goal pursued in each situation. In the case of **maximization** goal, the optimization function supposes the following formula:

Maximize RP = MP*Score/Max

RP – real performance; MP – current value of the indicator had in view
In the case of **minimization** goal, the optimization function supposes the following formula:

Minimize RP = MP*Score/Min

The application of the optimization functions referring to performance control management associated to Financial results leads to a **performance of 69,35%.** (figure no.3)
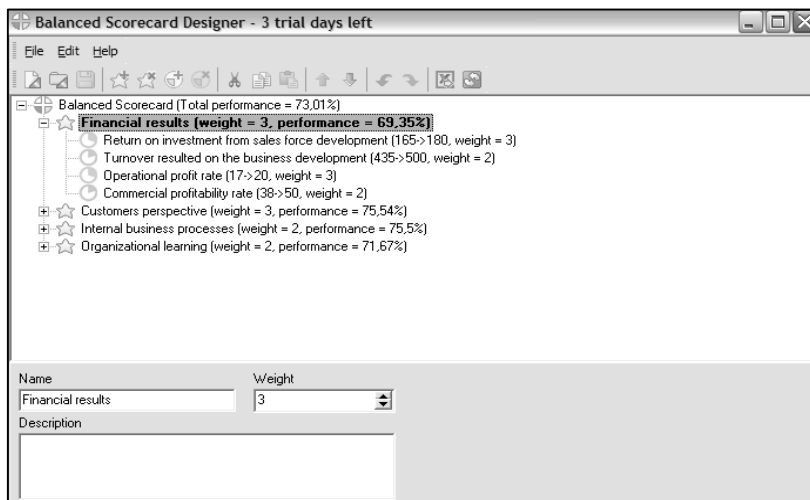
Figure 3. Determining the performance level of the Balanced Scorecard Financial results dimension

The optimization lags and the real value for the indicators associated to the **Customers perspective** dimension are presented in the table no. 2

Table 2. Indicators associated to the Customers perspective dimension

Indicators	Real value	Minimal value	Maximal value	Weight
Customer acquisition rate (%)	**69**	30	80	**3**
Customer loyalty rate (%)	**85**	55	90	**2**
Number of complaints/1.000 sales	**3**	0	10	**2**
Customer satisfaction degree (%)	**91**	70	100	**3**

We emphasize the fact that the indicator "*Number of complaints/1.000 sales*" supposes the application of the minimal target for the optimization function, and the decider concentrates the performance control strategy on customer acquisition rate and customer satisfaction degree. The application of the optimization functions referring to performance control management associated to Customers perspective leads to a **performance of 75,54%** (figure no.4)
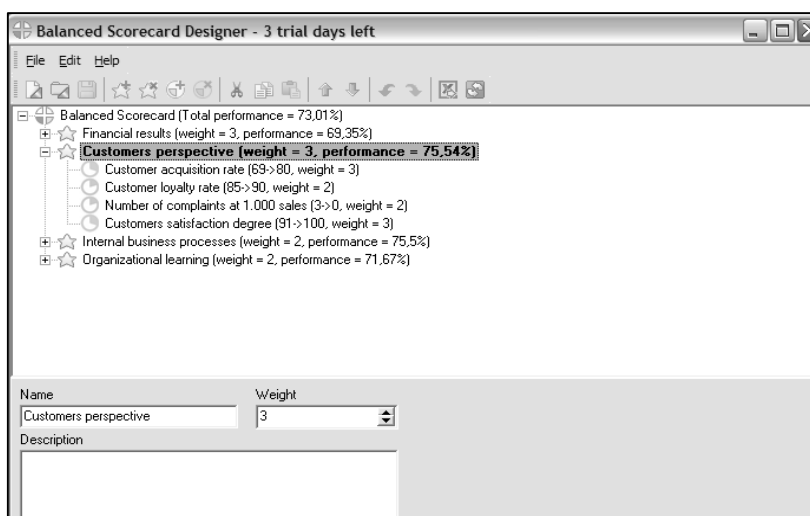

Figure 4. Determining the performance level of the Balanced Scorecard Customers perspective dimension

The optimization lags and the real value for the indicators associated to the **Internal business processes** dimension are presented in the table no. 3

Table 3. Indicators associated to the Internal business processes dimension

Indicators	Real value	Minimal value	Maximal value	Weight
Number of new products launched in distribution channels	**6**	2	7	**4**
On time delivery rate	**97**	90	100	**3**
Products covering rate on the distribution network	**95**	80	100	**3**

The internal business processes must lead to the project budget update and to the assurance of the periodical performance control, in order to learn how the strategy can be improved.

The application of the optimization functions referring to performance control management associated to Customers perspective leads to a **performance of 75,5%** (figure no.5)

The optimization lags and the real value for the indicators associated to the **Organizational learning** dimension are presented in the table no. 4

Table 4. Indicators associated to the Organizational learning dimension

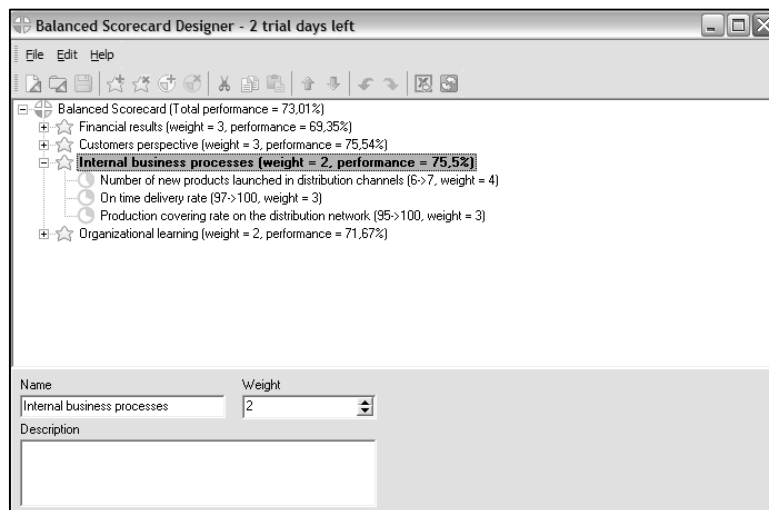| Indicators	Real value	Minimal value	Maximal value	Weight
Employees' competences and abilities development degree	**5**	1	7	**3**
Key positions covering degree on Sales Department	**5**	1	7	**4**
Sales force motivation degree	**6**	1	7	**3**

Figure 5. Determining the performance level of the Balanced Scorecard Internal business processes dimension

The appreciation scale of these three indicators associated to the *Organizational learning* dimension is the following: 1 – very low …7 – very high; the decider gives the almost same importance to these indicators, resulting a **performance of 71,67%.** (figure 6)
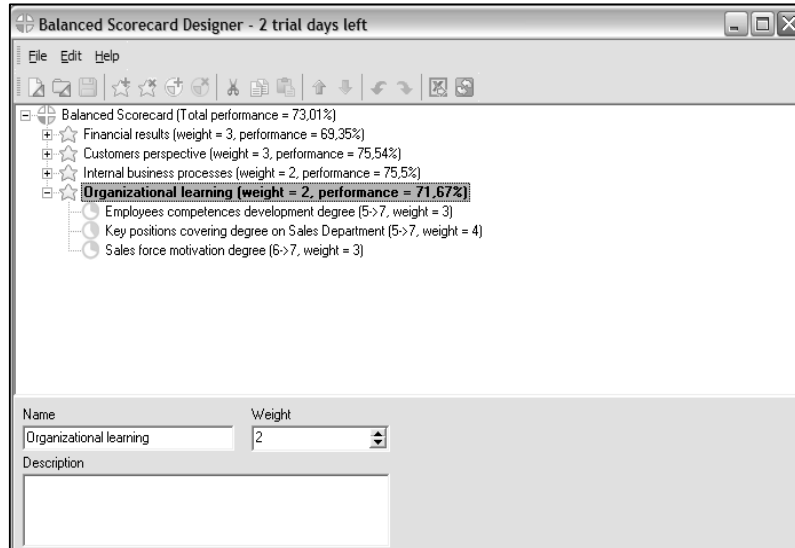
Figure 6. Determining the performance level of the Balanced Scorecard Organizational learning dimension

The global performance of the project is calculated as a weighted average of the performance indicators associated to each perspective of the Balanced Scorecard.

$$\text{Perf}_{glob.} = \frac{69,35*3 + 75,54*3 + 75,50*2 + 71,67*2}{10}$$

$$\textbf{Perf}_{glob.} = \textbf{73,01\%}$$

The value of the global performance proves a remarkable success rate of this project, because a satisfactory success rate for a project is between 50% and 70%, and the values that exceed this target signify an important success of the project.

Conclusions

The managers that use the Balanced Scorecard don't plan their strategies just only on financial indicators in view to evaluate the companies' performances. The Balanced Scorecard allows a real support for business, using **four processes**, which correlate long term goals to short term actions. These processes are: the vision translation, communication and relationships, business planning, feedback and learning.

- **The vision translation** is the process that helps the managers to achieve the agreement in an organization in what concerns the strategy. The vision must be expressed in an integrated set of goals and measures, accepted by the executive managers.
- **Communication and relationships** allow the managers to communicate the strategy on all stages of the organizational pyramid and link it to the individual and departmental goals.
- **Business planning** involves the opportunity to integrate financial and business plans. Almost all companies implement change programs in which the Balanced Scorecard allow the best allocation of resources to the tasks.

- **Feedback and learning** offer to the companies the possibility of strategic learning. The existence of the feedback and the evaluation of the processes in which the company's vision, its departments and the employees are focalized on the achievement of the performance control management system.

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