BSC methodology to improve operations

at ZP HET

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Abstract:

In this paper we started from establishing of management by performances on the basis of "step by step" balance, modeled on Kaizen's approach of constant improvements.
Such approach does not represent financial burden for organization. It does not bring abrupt and large changes, but it provides gradual advancement of business through modernization of work process.

Classical systems of measurement prevent the realization of the basic purpose of measurement, i.e. to identify measures and actions necessary for continuous improvement. The authors of this paper, using the methodology of Balanced Scorecard (***BSC***) in the classical system of financial reporting, have confirmed the following hypothesis:

- TQM models were among the first initiatives of performance measurement that highlighted the inadequacy of traditional accounting measurements for management purposes,
- Performance balanced scorecard model helps to overcome limitations for effective performance measurement. [1]

Keywords: management process, measuring, performance, improvement, *TQM*, *BSC*, new approach of integration of classical financial reporting, processing approach, *BSC* concept

1. Introduction

Improvement of effectiveness and efficiency of quality management system aims at improving financial results of the organization.
The subsidiary joint-stock company "Hydroelectric powerplants on Trebišnjica", Trebinje (HET) received the certificate of compliance with the requirements of standards ISO 9001, ISO 14001 and OHSAS 18001 in October 2010 (Integrated Quality Management - IQM).
Accurate and timely information on degree of meeting the set goals, and especially non financial initiators in causal-consequential chain of making new value, are precondition of continuous improvements. With use of *BSC* methodology we determine the improvement initiators and we make specific the key success indicators. By constant management reconsidering, we achieve continuous improvement of organization effectiveness.
Performance management, from quality aspect, is applied in logical and system approach. Improvement of performances with gathering and processing of information of financial, as well as of non financial character, is in the center of analysis of organization success. We considered the application effects of modern software solutions (*BSC*) on monitoring and measuring of achieved results of improvements. The found solutions in the mentioned

research are also experimentally checked on three companies. In the end of the analysis we chose the most optimal solutions for organization. Such approach enabled that through general hypothesis from management by quality and financial management by integration of management processes with performance management we are able to perform the modeling of infrastructure of business reporting according to the needs of request of Series of *ISO* standards within *BSC* framework. The final result of research is summarized in Model of integrated management quality aims based on balances and Integrated in Sydney model as periodic process of improvement based on *BSC* perspectives.

There are less and less dilemmas: that classical indicators of business sucessfullness, such as increase of total income, profit or money flow do not reflect real business capability of the company, because they do not say whether companies make values or not. [2].

2. Performance trends according to the balance

Business Excellence is based on the transfer of principles and tools of quality management into business management, or in other words, the ultimate goal of TQM-based quality management is achieving organization's business success in terms of finances and meeting the demands of all stakeholders. TQM is a combination of all approaches to quality management, aimed at improving company performance. This is a business philosophy, lifestyle, culture of its people and the choice of techniques for successful realization of company goals [1].
Here is the review of HET financial results for five years period; after deep structural analysis we will use itfor defining aims of improvement in spirit of business excellence (Table 1.). Starting from these aims, as quality aims ,we will improve managament process in the company. The stress is on measurements of performance of the business performances.

Self-judging enables to make a connection and coordination between systematic managament efforts which are done in organization for achieving excellence and degree of excelence by application of the concept of continuous improvements and inovations [3].

Table 1.Success balance (***BU***) – shortened scheme for the period 2006-2010.

Groups of accountor accounts	***POSITION***	***No of note ?***	***AMOUNT IN 000 KM***				
			Achieved. I - XII 2006	***Ach. I-XII 2007.***	***Ach. I-XII 2008.***	***Ach. I-XII 2009.***	***Ach. I-XII 2010.***
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	BUSINESS INCOMES		**48.921**	**30.512**	**48.600**	**64.699**	**66.613**
61	Incomes coming from sale	1	47.852	30.152	47.725	64.072	65.521
	Value change biological property	2	0	0	-	-	-
	Value change of performance stock	3	0	0	-	-	-

64,65, 67	Other business incomes	4	1.068	360.035	875.270	627	1.092
	Incomes from joint companies	5	0		-	-	-
	BUSINESS EXPENDITURES		**44.693**	**42.878**	**46.145**	**53.661**	**55.272**
	Purchase value of the sold goods	6	0			-	-
512,5 13	Expenses for material	7	1.382	1.109	1.309	1.129	2.015
52	Expenses of gross incomes, compensations	8	12.354	14.549	14.380	17.202	17.376
540	Amortization expenses	9	16.245	18.020	18.181	16.104	16.000
	Losses from property devaluation	10	0	0	-	-	-
53, 541, 55, 57	Other business expenditures	11	14.710	9.197	12.273	19.225	19.880
	Financial expenditures	12	**1.768**	**1.046**	**(498)**	**693**	**1.776**
	PROFIT OR DEFICIT BEFORE TAXATION	13	**2.459**	**(13.412)**	**1.956**	**11.731**	**13.118**
	Income tax	14		(116)	-	840	1.522
	NET PROFIT (DEFICIT) PERIOD	15	**2.459**	**(13.295)**	**1.956**	**10.890**	**11.595**

On the basis of the presented financial reports we conducted an analyses of:

- Productivity/Yield
- Propertry and
- Financial position of company.

Productivity/Yeild, ie. profitability is expressed through the following productivity rates:

- Gross yiels rates on total capital, calculated from the relationship of business profit and total capital;

- Gross yiels rates on total capital, calculated from the relationship of net profit and interest expenditures on one side and total capital on the other side and
- Gross yiels rates on own capital, calculated from the relationship of net profit and own capital.

In normal work conditions, if property structure considerably deviates on behalf of permanent property, is indication of low degree of capacities usage. Example of HET with its property structure points out that this is the company of high-capital activity, which demands its being also highly accmulative. The value of premanent property in the given period is on behalf of current assets reduced participation in structure for more than 5 index points, which is not an improvement.

Financial position has been considered through analyses:

- Liabilites structure
- Financial stability
- Indebtedness and
- Solvency

It is necessary to estimate the trend regarding movement of disposable capital in certain period (is it increasing or decreasing, nominally and with changed structure). If oscillations are smaller, they cannot significantly influence company's payment ability. Nominal capital increase with decrease of paricipation procent on behalf of increase of obligations is a negative trend which, unfortenately, continues. Non-distributed gain appears as free source and it increases the capital, but its influence is minor.

Table 2.Financial stability according to the Balance sheet (***BS***)

Ord. No.	**Description**	**2006**	**2007**	**2008**	**2009**	**2010**
	1	**2**	**3**	**4**	**5**	**6**
1 **BS ADP 001**	**Permanent property**	**988.932.403**	**974.219.168**	**900.525.286**	**888.677.976**	**883.249.701**
2 **BS ADP 101**	**Capital decreased for loss to the amount of the capital**	**998.201.507**	**986.901.130**	**935.748.260**	**948.305.303**	**953.651.954**
3. **BS ADP 133**	**Long-term obligations**	**20.403.011**	**12.478.877**	**5.243.086**	**5.865.556**	**7.140.558**
4=2+3	**Permanent long-term capital**	**1.018.604.518**	**999.380.007**	**940.991.346**	**954.170.859**	**960.792.512**
5=1/4	**Coefficient of**	**0.97**	**0.97**	**0.96**	**0.93**	**0.92**

	financial stability					
6=4-1	**Free capital**	**29.672.115**	**25.160.839**	**40.466.060**	**65.492.883**	**77.542.811**
7=1-2	**Missing capital**	**9.261.929**	**-**	**-**	**-**	**-**

Financial stability (long-terma financial balance) has been established when long-term linked property is equal to the permanent and long-term capital, so conditions for maintaining liquidity are created within long-term financing (coefficient of financial stability should be less than 1: Table 2.). Financial stability indicates satisfactory trend.

The real strategy implies accordance of interest of all elements and determining mechanisms by which a balance would be maintained. However, continuous measuring of performance enables timely and corrective steps to be taken and if necessary, changing of strategy [4].

However, without change of conditions in macro economic layout, it would be difficult to find solution which would be more optimistic for positive trends in HET. Therefore, it is difficult to find solution which would be in function of more optimistic expectations for positive trends in HET without changes on macro economic layout. Therefore, urgent actionf of managament process improvement are necessary. Modelling will be done with BSC.

3.Balance analyses in BSC framework

In this paper the analyses of HET financial and lucrative position is approached through data from annual financial reports, decomposed to components through vision of BSC perspectives.

Defining of improvement measures is easier with help of ***BSC*** framework. The results of business analyses are the directions of improvement. Further, with continuous application of 3P-approach (check-reconsider-improve), practically through system of self-estimationand with help of BSC framework, trends of defined indicators are measured. In this example, through management of quality system we achieve management of company performances, by establishing management with aims of improvement of process performances. So, with making improvements through continuous setting of improved aims and measuring their achievements, we manage the business success. In the center of consideration is the process of improvements management. So, the application of systematic approach and managements of processes through the process of management improvements of indicators regarding financial reporting in BSC environment enables monitoring trends of improvement. The base is in detailed business analyses, of balance sheet as presentment of property situation of the company, as well as success balance, as the expression of business activities results. By analyses of cash flow enabled is the access to causal and consequential relations within flows of financing and investing as well as flows of incoming and outgoing money. Financial reports (Balance sheet – BS; net money flow – NMF; changes on capital) are presentment of all activity flows in the company. By defining improvement factors, combination of non-financial indicators, as initiators of improvement, with financial indicators as consequential and their building up into the aims of quality, confirmed is the existence of relation between management process of managing improvements and performances of quality of the company. By defining relations between management though process of improvement managements, building up

improved indicators from financial reports into the quality aims, confirmed is that quality of management process from financial reports into aims of quality, confirms that the quality of management process of managing improvements is crucial for the quality of company as a whole. Defining of relations between management by process of managing improvements, by embedding improved indicators from financial reports into quality aims, confirms that quality of management process by improvements is determining factor for the quality of the company as a whole. Quality of managing process by aims of improvement is directly in function of quality of company performances (Image 1). Clearly defined improvements are translated into the system of indicators whose embedding into aims of quality realizes the quality of company's performances. (Table 3). That spiral of quality is the road of the company's success as much as the real initiators of improvement are recognized and are being proactively managed (Image 4).

Table 3.Degree of indicator's achievement according to***BSC***

Perspective	**Measure(indicator)as per perspectives**	**2006.**	**2007.**	**2008.**	**2009.**	**2010.**
Studies of innovative-ness and development of employees (P_1)	**M1-Produkt.zapos. proiz. kWh po zaposl.** **M1-Productivity of employees production kWh as per employee**	**64**	**48**	**57,33**	**64**	**72**
	M- 2 amount% of earning in business expenditures	**54,17**	**66,67**	**65,83**	**77,08**	**79,17**
	M- 3 No of shareholders of payable dividends	**67,07**	**43,9**	**43,9**	**58,54**	**54,88**
	M- 4 No of injuries at work	**70**	**60**	**62**	**65**	**60**
Internal processes (P_2)	**M- 5 Expenses of production services**	**73,86**	**60,23**	**62,5**	**56,82**	**70,45**
	M- 6 %Expenses Am / in business expenditures	**71,43**	**80,52**	**74,03**	**61,04**	**58,44**
	M -7Business expenditures	**64,56**	**58,23**	**64,56**	**74,68**	**81,01**
	M- 8 Investments	**72**	**64**	**66**	**64**	**68**
Consumers (P_3)	**M- 9 Electro-energetic balance kWh-plan**	**64,1**	**64,1**	**65,38**	**65,38**	**65,38**
	M- 10 Continuous interruptions/No of stoppages due to breakdowns	**61,04**	**57,14**	**64,94**	**48,05**	**57,14**
	M- 11 % f participation of ZP HET in total production of MixedHoldinga	**67,86**	**59,52**	**59,52**	**70,24**	**77,38**

	M- 12 Expenses for fares	**45**	**48**	**75**	**60**	**63**
Finansijska (P_4)	**M- 13 Business income**	**76,25**	**51,5**	**76,25**	**81,25**	**86,25**
	M- 14 Profit	**60,24**	**-60**	**60,24**	**68,67**	**74,7**
	M- 15 ROA Disgorgement on business assets	**51,25**	**38,55**	**51,25**	**57,5**	**65**
	M- 16 Indicator of general liquidity	**56**	**40**	**65**	**69**	**40**

Table 4. Average degree of indicators achievement as per perspectives

	2006.	**2007.**	**2008.**	**2009.**	**2010.**
Financial perspective	**66,14**	**57,31**	**66,95**	**72,52**	**75,2**
Perspective of buyers	**62,77**	**51,5**	**67,26**	**63,3**	**65,83**
Perspective of internal processes	**67,55**	**61,17**	**65,17**	**69,22**	**75,86**
Perspective of studying and development	**63,46**	**61,14**	**58,6**	**67,13**	**67,13**
Total	**64,87**	**56,38**	**65,02**	**68,02**	**70,91**

Image 1.***BSC***Chart of performances achievement from the Balance

Translation Image 1

Short-term obligations	82.00
Claims from sale	74.00
Money spent for the paid dividends	67.00
Money spent for activities of investing	82.00
Incomes u activity of investing	79.00
Changes of the capital t the end of the period with regards to the beginning of the period	78.00
Value of investments during calculation period	49.00
Expenses for fares, advertising and propaganda and other expenses	71.00
Expenses of production services	67.00
PERSPECTIVE OR USERS	**71.87**
Participation of ZP HET in total production of MH EPRS	27.71
Recommended price by RERS	69.23
Part of income belonging to shareholders by decision of Supervisory board	78.82
No of energetic re-balances (MH ERS)	70.00
PERSPECTIVE OF INTERNAL PROCESSES	**70.37**
Number of dropouts due to the damas on installations	24.00
Participation of gross compensations and incomes in total expenditures	40.70
Number of contracts regarding investments and their participation in total	31.17
Indicator of general liquidity current assets/short-term obligations	67.00
ROA= net income/total assets	69.20
PERSPECTIVE OF STUDYING AND DEVELOPMENT	**56.36**
Number of employees in production and technical preparation larger than 60%	62.50
Number of injuries at work	22.73
Annual expenses of fairs as per employee, and similar	53.16

By analyses of the level of performance's achievement per years we conclude that the critical success factors are:

- Indicator of general liquidity
- Business result
- Number of dropouts due to the damages at the installation
- Expenses due to paid dividends
- Demands from sales

4. Balances, BSC and QMS

Strategic map should more clearly show causal-consequential relationships and connections between performances measurements of different dimensions, through which improvements and desired results can be achieved. Namely, it connects desired results with determinants of those results. Strategic map shows how should one organization turn its initiatives and resources (material and non-material) into achieved economic effects.
So, in***HET,*** the initial step was creation of strategic map on the basis of the forms for financial reporting, which made easier defining of aims and made conditions for monitoring aims of improvement and measuring degree of their realization (Image2.)

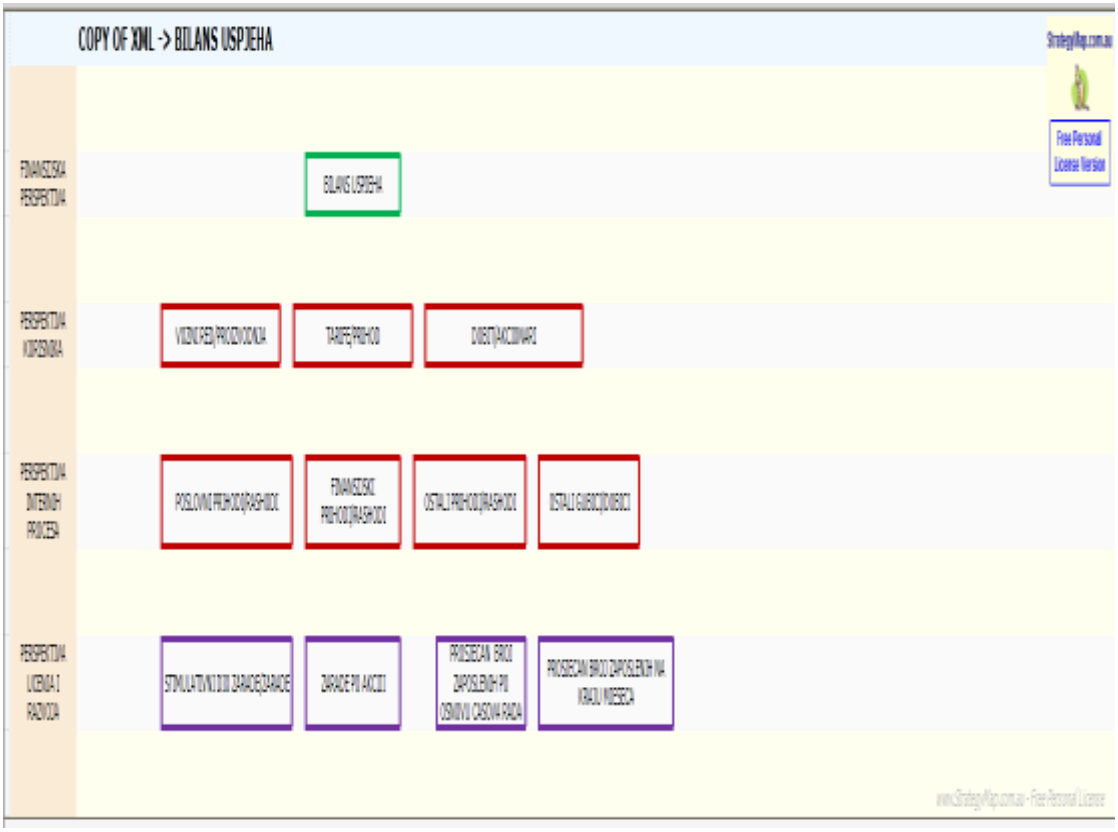

Image 2.Example of the profit and loss report (***BU***)

Translation Image 2

FINANCIAL PERSPECTIVE
Profit and loss report
PERSPECTIVE OR USERS
Chedule/Production
Tariff/Income
Chare/Holders
PERSPECTIVE OF INTERNAL PROCESSES
Business Incomes/Expenditures
Financial Incomes/ Expenditures
Other Incomes/ Expenditures
Other Losses/Profit
PERSPECTIVE OF STUDYING AND DEVELOPMENT
Stimulative part of income earnings
Earnings per action
Average number of employees according to hours of work
Average number of employees at the end of the month

There are three the most common used purposes of ***BSC***: bringing of decisions, rationalizationand coordination and control [5].

Without these trhee components there is not a possiblity of managing the business improvements.

BSCis perfectly accorded with***TQM***principles, although from***TQM***we cannot see move of quality into financial success, which***BSC***provides. The initiative for quality improvement, efficiency and efficiency of inernal processes is also reflected in aims of ***BSC***. Developing of***TQM*** principle towards innovative processes and improvement of relations with buyers/users of projects/services is also noticedin aims of some internal business processes. Therefore, companies which already apply methods of continuous improvement and metrics of ***TQM***, have possibility to build up their programs with strategic directid framewrok ***BSC***. ***BSC*** reorganizes principles of ***TQM***into new frames. ***BSC***, in several ways, improves the efficiency of ***TQM*** program. It first identifies those internal processes for which the improvement will be of extreme importance for success of the strategy. In majority of companies, local ***TQM*** programs are successfull, but their influence cannot be observed in financial or some other similar performance.

5. Research results

Therefore, there is no doubt that ***QMS*** and ***BSC*** have the same goal, and that is advancement of organizational performances. Thereto, the road in reaching aim is different for these two modes. ***QMS*** implementation, surely, leads firstly to greater satisfaction of users, and also whole performances of the organization. Implementation of ***BSC*** demands deeper understanding of critical success factors of organization from more aspects as well as measuring and performing in their areas [6].
Many large organizations work with measuring management systems such as ***BSC*** but they also do that often in ***QMS*** environment which often represents certain challenge, since ***BSC*** and ***QMS***can have common essential elements [7]:

- Based on measuring
- Push to the dialog on performances advancement
- Direct to changes and actions
- Are based on principles, studying and feedback
- Long-term success of the model depends on determination of management for performances advancement
- They both deal with causes, consequences and
- They both follow the structure of the process.
-

In praxis I many cases of ***BSC*** do not represent nothing else but formalized collection and analyses of "*recordings*" and thus also recordings of quality in order to demonstrate effectiveness of the process which has always been request of ISO 9001 standard. The use of ***BSC*** provides organizations from the top downwards, a clear focusing on the collection and analyses of the quality of recording, and the same is also in the (***ISO***9001 section 8.2.2 Internalcheck) stressed the need of check (documentation) aiming to meet requested demands [8].

Image1. Confirm the importance of choosing key indicators of success and creating conditions for proactive management of causal-consequential bonds of non-financial and financial performances of quality. Measuring of advancement as per *Sydnay* model visually gives a clear picture of improvement achievement, as well as the level of unused potential (Image 3.)

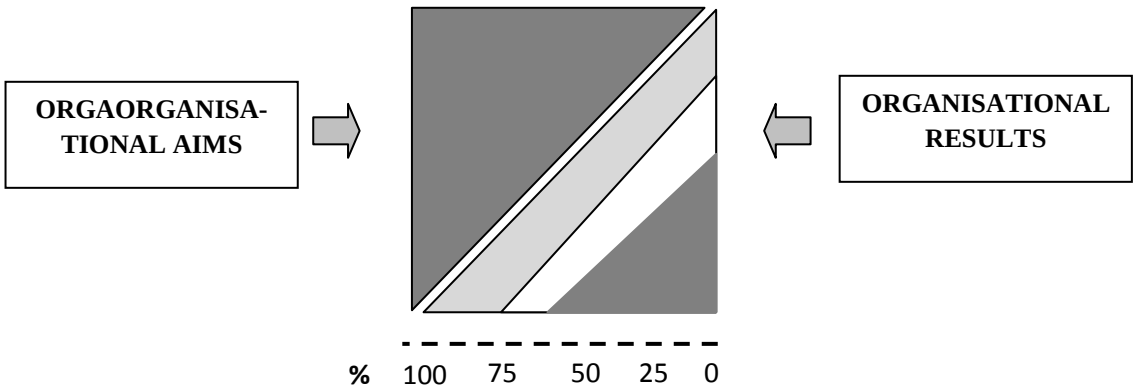

Image 3.Example of results presentation according to Syday model [8]

6. Instead of conclusion

Analysing financial position of ***HET*** we observe increase of efficiency regarding expenses management. Hypoteseis that analysis in *BSC* makes measurement and analyses easier and improve the organisation performances, has been confirmed.
System orientation of management becomes fully expressed by according the system for Sistemska orijentacija menadžmenta dolazi do punog izražaja usklađivanjem sistema za providing quality with standards ***ISO*** 9000, and it is based on the preventive. By further development of the system for management with quality according to the standards ***ISO*** 9000, orientation to effectiveness and efficiency of the organization becomes stronger. At the same time, with mentioned orientations within system of quality, demands for its constant improvement become larger [9].
Thus, establishing of management by performances, the process after process would enable gradual widening of management by performances through the whole system. Process chosen as the critical one from the aspect of reaching goals, which is at the same time one of the key processes in the system, by putting under control and improvement on the basis of management by performances, would represent good example of efficiency for other processes in the system too. In thispaper the application of strategic system of management by performances is especially considered such as is BSC because of its special orientation on cascading aims which, in fact very much contribute to achievement of the defined strategy. Namely, ***BSC*** model, created for certain process provides measuring of success of that process with regards to the defined aims but it also provides integration with BSC models of other processes. By incorporating these *BSC* models we get one comprehensive, strategically oriented, system of management with performances which would be formed by gradual advancement of organization business.

Therefore it is necessary, today more than before, to ask question of possibility of bringing closer the management accounting to the demands of business management, all in the interest of existence, growth and development of the company [10].

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