

**DETERMINANTS OF SUCESSFUL CREATION OF THE BALANCE SCORECARD CONCEPT
IN A METALLURGICAL COMPANY**

SUŠKOVÁ Andrea, BUCHTOVÁ Jana

VSB - Technical University of Ostrava, Czech Republic, EU, jana.buchtova@vsb.cz**Abstract**

The contribution deals with the first of a series of prerequisites for successful implementation of the BSC concept. Setting strategic objectives and the quality thereof are the main criteria of the BSC itself and have a significant impact on its successful implementation. These strategic objectives are derived from the results of financial analyses which usually predict them. Quality reporting and appropriately selected controlling indicators of business performance are therefore absolutely necessary. This contribution aims to propose appropriate reports for linking the above mentioned with the specified strategic objectives of the BSC in an unnamed enterprise.

Keywords: Balanced scorecard, factors, reporting, indicators

1. PRECONDITIONS FOR CREATING BSC

Balanced Scorecard is a special kind of specification, illustration and monitoring of strategies. It can be used to significantly increase the likelihood of implementing a proposed strategy. Strategic objectives are derived from a vision and strategy, therefore becoming strategically important goals of an enterprise, ruling its overall success [7]. To plan and evaluate such objectives, it is necessary to assign them to financial and non-financial measures [3]. Basic data for strategic planning and management in all companies are based on financial accounting and operational control reports [1]. However, these are not enough for quality management and increasing the value and performance of an enterprise. This default data has to be adapted for the need of creating a BSC in connection with the EVA indicator.

The first precondition for creating a BSC is therefore a necessary modification of the input data so as to reflect the economic reality of the enterprise as well as possible. If we want to proceed primarily from the calculation of the EVA indicator, we have to adjust the data from the balance sheet and profit and loss account. This economic indicator is a suitable basis for creating a BSC since it fuses all business activities and processes and helps identify sources of value creation of the enterprise.

1.1. EVA - Economic Value Added

This indicator represents the difference between the operating profit after taxes and costs of any capital invested. It expresses a business goal of all companies - creating value added, which means increasing business value for the company owners. The EVA concept is an economic model, therefore requiring a conversion of the input accounting data. The EVA indicator is usually expressed according to Equation (1).

$$EVA = NOPAT - WACC \cdot C \quad (1)$$

Where:

NOPAT (Net Operating Profit After Taxes) = profit from the main activity of the company after taxes

C = capital fixed in assets which are being used in the main activity = *NOA (Net Operating Assets)* at the beginning of the evaluation period

WACC = *Weighted Average Costs of Capital*

1.2. Adjustment of the input data

Managers need to base their decisions on data and indicators that faithfully reflect the situation of the enterprise and give signals about the rightness of their decisions. Accounting data, however, does not reflect the economic reality faithfully. That's why it is necessary to make some adjustments to convert this data into a basis providing a more realistic view of the economic situation. The aim is to reach the symmetry between the statements being adjusted - the balance sheet and profit and loss account - in order to calculate the EVA. Entries from the balance sheet are modified into the so-called net operating assets and the economic result from the profit and loss account is modified into the operating profit.

1.3. Conversion of the assets from the balance sheet into NOA

The aim of this adjustment is to define NOA indicators, which means Net Operating Assets. All adjustments on the assets side will also be reflected proportionally on the liability side of the Balance. The modification particularly consists in:

- **earmarking non-operating assets** - assets which are a form of saving money for the enterprise, not investments related to its main activity. It is recommended to earmark the following, for instance:
 - short-term securities and money, money surpluses in cash and on accounts;
 - unfinished investments, since these are not contributing to the sales of the enterprise yet.
- **capitalizing - entering - items in the market valuation which are not among the assets** - these often include the following:
 - property rented under finance lease;
 - property not shown in the assets by the company;
 - revaluation of the assets into market values (depreciation, provisions, reserves etc.);
 - intangible assets with long-term anticipated effects - e.g. costs related to employee training, marketing, entering new markets [2].
- **reducing the assets by non-interest bearing loan capital** - eliminating all short-term, circulating non-interest bearing loan capital (short-term trade liabilities, towards shareholders, employees, security and health insurance, towards the state and others). This way, the circulating assets are recalculated into working capital and the operating assets become net operating assets. The costs of capital will be included in the EVA together with the costs of equity capital in the form of WACC.

1.4. Conversion of the profit and loss account into NOPAT

These modifications result in the definition of the net operating profit - NOPAT (Net Operating Profit After Taxes). The profit and loss account is based on the economic results of ordinary activities, thereby excluding extraordinary expenses and revenues. The first principle is to preserve the symmetry between NOA and NOPAT.

Extraordinary items are *excluded* from the economic result, e.g.

- changes to the valuation method, deficits and losses, creating and accounting for reserves for extraordinary expenses, other extraordinary expenses and revenues.

Adjustments for **changes in the equity capital** resulting from the adjustments to NOA - entering costs of investment character, changes in the depreciation of assets, changes in hidden reserves, changes in provisions.

After adjusting NOPAT, it is also necessary to adjust the tax for the so-called theoretic tax, calculated from the difference between the original ER and NOPAT, multiplied by the tax rate [2].

1.5. Weighted Average Costs of Capital

The WACC (Weighted Average Costs of Capital) indicator reflects assumptions on how many percent, on average, the enterprise pays for the capital to its providers. The WACC rating model by the Ministry of Industry and Trade of the Czech Republic suggests that the value of this indicator should range between 20 - 30 %. Loan capital in this concept is diametrically different from the foreign sources from the balance sheet. This is only a chargeable loan capital, which means, for instance, interest-bearing loans, loans, overdue receivables on which interest will have to be paid as the case may be. General formula for the WACC is displayed by Equation (2) [4].

$$WACC = r_d \cdot (1-t) \cdot D / C + r_e \cdot E / C \quad (2)$$

Where:

r_d = the interest rate paid on the chargeable loan capital

t = corporate income tax (tax rate)

D = interest-bearing loan capital (Debts)

C = total chargeable capital (D+E)

r_e = return on equity in % (often discount p.a.)

E = equity (Equity)

2. CASE STUDY

This part of the case study deals with the adjustments to the default data for the calculation of the Economic Value Added (EVA) index. This indicator will be subjected to a sensitivity analysis and a report will be elaborated, serving as a basis for setting strategic objectives of the Balanced Scorecard concept. I have used data and processes of an unnamed metallurgical enterprise in this study. The aim of the controlling group of the metallurgical enterprise is to distil the Balanced Scorecard concept, the economic value added and financial analysis indicators into the strategic business management and to use these as a device to increase business performance.

The agreement between the owners and top management provided the following strategic objectives, which will be split into individual perspectives in the implementation of the BSC and supported by more specific criteria and measures - see **Table 1**.

- Reduction of the energy per ton a cast material.
- A difference weight of a steel melting (technological process vs. reality).
- Increasing the labor productivity in support production centres.
- Completion of the TPP and the error rate of the TPP.
- Reducing unrealized orders.
- Reducing overheads.

The determination of individual causes and consequences and relations among the individual processes may be based on the data from financial analyses evaluated using the Economic Value Added indicator and the further breakdown thereof [5]. Modification of the default data for the EVA indicator is shown below. All data is produced using internal corporate information

Table 1 Strategic objectives in the metallurgical company

Criterion - report	Frequency	Target	Description	Level of control
Reduction of the energy per ton a cast material	per month	streamlining a casting process of 5 %	Costing casting, exceeding the norm, ancillary costs	Production manager, Technologist, controlling
The unrealized contracts	per month	the maximum reduction in unrealized contracts, a risk prediction	after 180 days, the contract becomes "unrealized", solutions for further action, quantification of the loss	controlling, Sales manager, Production manager, Top management
Basic data for N-items in SAP	2 x a week	continuous removal unrealizable of all purchased items (for JDA FP)	display all items from N-issued IN, lacking the contractor or the time advance	procurement, Purchasing manager, controlling
Control of the actual and projected time in KP	per week	increase in labor productivity in manufacturing, completion and debugging TPP	only operations on the monitored centers; show differences above 10 % + and -	controlling, a master, Production Manager
The general costs	per month	reducing the cost about 15-20% of centres	control and cost planning and efficient use of	controlling, a enter managers, Top management
A difference weight of meltage (TP vs. reality)	per month	cost reduction of 10 %	input costs, costing norms, grade exceeded TP	head of preparing batch, head smelting, Production manager, controlling

2.1. Adjustment of assets for the calculation of net operating assets (NOA) in a metallurgical company

The conversion of assets was based on internal accounting statements of the enterprise - Balance Sheet and Profit and Loss Account. Costs of advertising and employee training associated with entering new markets were included in the assets, the property was revaluated into market price. The assets were reduced by the value of assets under construction and short-term, non-interest bearing loan capital [5]. There has also been a capitalization in the adjustment - e.g. the property rented under finance lease. This alternative is not included in this case since the enterprise has no financial leasing.

A summary of changes when converting the assets of the enterprise concerned into NOA is shown in **Table 2**.

Table 2 Summary of changes when converting the assets into NOA

(in thousands CZK)	2013	2014	2015
Total assets	2 088 712	2 191 499	1 955 058
+ capitalization of costs of advertising	550	550	549
+ capitalization of costs of employee training	6 727	6 727	6 728
+ valuation difference	120 112	315 025	298 615
- IFA under construction	4 300	350	1 372
- TFA under construction	61 451	49	0
- non-interest bearing loan capital	839 424	720 585	577 765
NOA	1 310 926	1 792 817	1 681 813

The adjustments to the assets considerably affected both the property and financial part of the Balance - see **Table 3**. There has been a new item created in the financial part of the Balance - „Equity equivalents“, which is the so-called balancing item of the liabilities side. The conversion items are shown on the assets side.

Table 3 Adjusted balance of the enterprise

	Balance - property			Balance - finances			
	(in thousands CZK)	2013	2014	2015	(in thousands CZK)	2013	2014
Fixed assets	528 473	1 052 928	908 707	Equity	1 097 214	1 357 173	1 336 734
TFA	336 209	609 299	446 698	Equity capital	10 050	10 050	10 050
(-) TFA under construction	61 451	49	0	(-) TFA under construction	61 451	49	0
				(-) IFA under construction	4 300	350	1 372
Valuation differences	120 112	315 025	298 615	Investments - advertising	550	550	549
IFA	7 231	6 692	7 330	Investments - employee training	6 727	6 727	6 728
(-) IFA under construction	4 300	350	1 372	Capital funds	40 283	7 004	-19 067
Investments - advertising	550	550	549	Reserve funds	13	13	13
Investments - employee training	6 727	6 727	6 728	Previous years profit	822 663	985 230	1 018 203
FFA	123 395	115 034	150 159	Reporting period profit	162 567	32 973	23 015
NWC	782 453	739 889	773 106	Valuation differences	120 112	315 025	298 615
Stock	377 406	370 867	405 450	Loan capital	213 712	435 644	345 079
Liabilities	1 096 459	976 667	895 512	Short-term liabilities	839 424	720 585	577 765
STI	129 431	90 274	34 925	(-) Non-interest bearing liabilities	839 424	720 585	577 765
Accruals and deferrals	18 581	22 666	14 984	Bank loans	205 203	396 555	336 373
(-) Non-interest bearing liabilities	839 424	720 585	577 765	Accruals and deferrals	8 509	39 089	8 706
NOA	1 310 926	1 792 817	1 681 813	NOA	1 310 926	1 792 817	1 681 813

2.1. Adjustment of economic result from ordinary activities before taxes for NOPAT in a metallurgical company

The economic result from ordinary activities before taxes was adjusted for interest costs and profit from the sale of fixed assets. Influences of changes in equity, which became evident when calculating the NOA, were also reflected in NOPAT, that means costs of investment character (advertising and employee training) and modification to the depreciation of fixed assets. It was necessary to adjust the economic result for the above mentioned items and also adjust the tax amount for the theoretical tax which would be paid from the operating profit. The operating profit after taxes (NOPAT) was calculated thereafter [6].

Table 4 Summary of changes and adjustments to the ER from ordinary activities and the calculation of NOPAT

(in thousands CZK)	2013	2014	2015
Profit from ordinary activities before tax	213 705	47 926	29 527
- interest expense - loans	12 045	11 678	15 259
- profit by selling FA	-4 526	-479	-1 260
+ capitalization of employee training	6 727	6 728	6 728
+ capitalization of costs of advertising	550	550	549
- depreciation, valuation differences	10 810	8 352	6 848
Profit from ordinary activities after adjustment	202 653	35 653	15 957
Profit difference	-11 052	-12 273	-13 570
Tax originally paid	51 138	10 811	6 512
Tax calculated additionally	-2 010	-2 332	-2 578
NOPAT	153 525	27 174	12 023

Table 4 provides an overview of all modifications to the statement into net operating assets (NOPAT). Impact on deferred taxes could be subject to further calculations and thoughts. The development of NOPAT and net operating assets NOA is expressed in **Figure 1**. NOA increased in the reporting period, due to growth of total accounting assets. Compared with the book economic result, the economic profit NOPAT is lower, which is due to the inclusion of investment depreciations among economic costs.

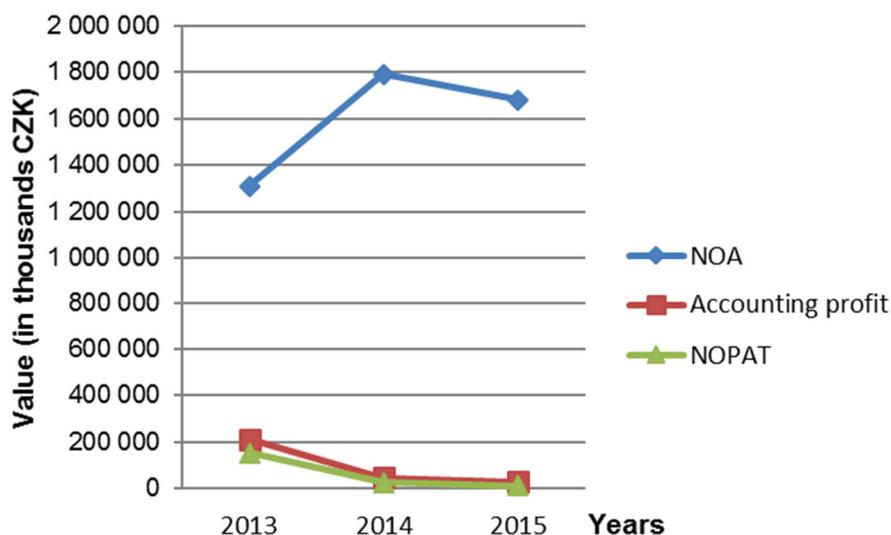


Figure 1 Development of NOPAT and NOA

Calculation of the EVA indicator will continue by calculating the WACC and the values will eventually be substituted into the EVA formula mentioned in the introduction.

3. CONCLUSION

The reports suggested above - tables for the calculation and determination of adjusted values of assets and economic results as used in Section 2 of this article - will aid an appropriate integration of financial analysis into the concept of business performance measurement by means of the EVA indicator and create starting points for the implementation of a strategy using Balanced Scorecard.

These analyses referred to in Articles 2.1 and 2.2 relate to the metallurgical company as a whole, its development and performance. Establish appropriate criteria BSC, their measurement and monitoring are therefore reflected in the results of the whole metallurgical company. For example, in reducing costs melting will be used to monitor specific criteria that will cover the reduction of energy costs, input materials and the like at the level of financing. At the customer level then reducing scrap and improving the quality of individual melting, which will be reflected in subsequent processing resorts forming, scouring cast iron, heat treatment and other, will fall additional adjustments and new processing. An indicator of business processes and will be a more effective and measurement can be detected the positive values. All these clearly and specifically set parameters reveals the possible need training or skills upgrading human resources, and ensuring employees with high qualifications. The coexistence of these indicators with BSC indicators EVA analysis will be needed for managerial decision-making and management and prediction of potential pitfalls.

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