

Helena ASCHENBRENNEROVÁ\*, Lilia DVOŘÁKOVÁ\*\*

## **MANAGERIAL TOOLS FOR PERFORMANCE MEASUREMENT**

### **Abstract**

*Managerial performance evaluation styles continue to be an important area of management accounting research and practice. Traditional performance measurement systems are mostly based on traditional financial evaluation but it is necessary to focus on non-financial identifications as well. The aim of this article is to design a new approach to performance measurement system classification for small and medium sized industrial companies.*

### **1. INTRODUCTION**

As a response to changes occurring in the competitive environment due to factors such as globalisation, increasing complexity of products and services, evolution and instability of demand, companies need to modify and continuously improve their business practices. As a result of these pressures, companies tend to focus on performance evaluation systems.

This study, which is based on both financial and non-financial evaluation styles is, in part, a reaction to environmental, organizational and economic circumstances. Special attention is paid to the extent to which the perceived environmental changes, degree of decision making decentralization and profitability affect financial and non-financial evaluation styles.

### **2. REVIEW OF PREVIOUS RESEARCH**

Managerial performance evaluation is one of the important tasks often served by accounting reports. It is of great importance to the managers being evaluated; not least because the distribution of organizational rewards is often connected with the results of the evaluation process. Given that many firms have adopted new performance measurement systems providing both financial and non-financial performance measures (Kaplan & Norton, 1992), it has become important to understand how these types of measures are used in managerial performance evaluation. In fact, research on financial and non-financial performance evaluation styles has recently been called for by (Sprinkle, 2003).

---

\* Ing. Helena Aschenbrennerová, E-mail: helen@kpv.zcu.cz

\*\* Doc. Ing. Lilia Dvořáková, CSc., E-mail: ldvorako@kpv.zcu.cz

University of West Bohemia in Pilsen, Faculty of Mechanical Engineering, Department of Industrial Engineering and Management, Univerzitni 8, 334 54 Pilsen, Czech Republic

Non-financial measures are not a new phenomenon. For example, General Electric in the US was using non-financial measures in the 1950s. Similarly, a number of theorists have over the years been pointing to the importance of non-financial measures (e.g. Hopwood, 1973; Parker, 1979; Anthony et al., 1984; Merchant, 1985; Schoenfeld, 1986; Eccles, 1991; Maciariello and Kirby, 1994).

Kaplan and Norton (1992, 1993, 1996a and 1996b) proposed a specific framework to facilitate the translation of strategy into action. This framework has been called the Balanced Scorecard (BSC). The BSC is an integrated set of performance measures comprising both current performance indicators, drivers of future performance, and financial as well as non-financial measures. For managers of organizations, the function of the BSC is to provide a holistic view of what is happening both inside and outside the organization (Chang and Chow 1999).

### 3. PERFORMANCE MEASUREMENT CRITERIA

In an industrial company performance evaluation it is important to preface the main definitions for a clear understanding of the relations between them.

- **Efficiency** (also called cost efficiency)
  1. is skillfulness in avoiding wasted time and effort, in other words, the ratio of the output to the input of any system [40],
  2. is quantified by a comparison of the standard hours allowed for a given level of production and the actual hours taken – efficiency ratio<sup>1</sup>.
- **Productivity** is defined as the ratio of the quantity and quality of units produced to the labour per unit of time. [40]
- **Effectiveness**
  1. is a capacity to produce strong physiological or chemical effects or, in other words the quality of being able to bring about an effect [40],
  2. Učeň gives another definition of effectiveness: ability to provide the needed output by utilization of quantity of inputs<sup>2</sup>
- **Metric** is a system of related measures that facilitates the quantification of a particular characteristics.<sup>1</sup>
- **Performance measurement system** is a system for measuring company performance based on financial and non-financial metrics.<sup>2</sup>
- **Performance** is defined as ability of the system to ensure effectiveness by using a quantity of inputs.<sup>2</sup>
- **Activity** is an elementary item of the production process which can be determined by extended costs and, eventually, by a measurable effort.

The above given general framework will be used as a starting point for this study of performance measurement practices.

---

<sup>1</sup> Oxford dictionary of Accounting

<sup>2</sup> Učeň, P. a kol. *Metriky v informatice, Jak objektivně zjistí přínosy informačního systému*. 1st edition: Praha: Grada, 2001. 140 p. ISBN 80-247-0080-8.

## 4. PERFORMANCE MANAGEMENT APPROACH

### 4.1. Internal and external environment for a performance evaluation system

A successful performance evaluation system has to evaluate the internal environment and the external environment as well.

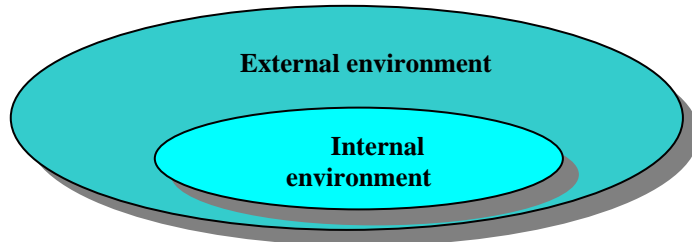


Fig.1. Internal and external environments of a performance measurement system

### 4.2. Internal environment

Measurement and subsequent evaluation are required for consequent decision-making and company control. The internal environment includes two significant variables – inputs and outputs.



Fig.2. Internal environment

### 4.3. Internal environment determinants

Costs are related to all inputs. These costs can be calculated as costs of the product or as costs related to the product. The time factor is significant for inter-business activities and quality is the factor which is related to outputs. It is necessary to interconnect cost management with the other determinants, time and quality. This interconnection is shown in Figure 3.

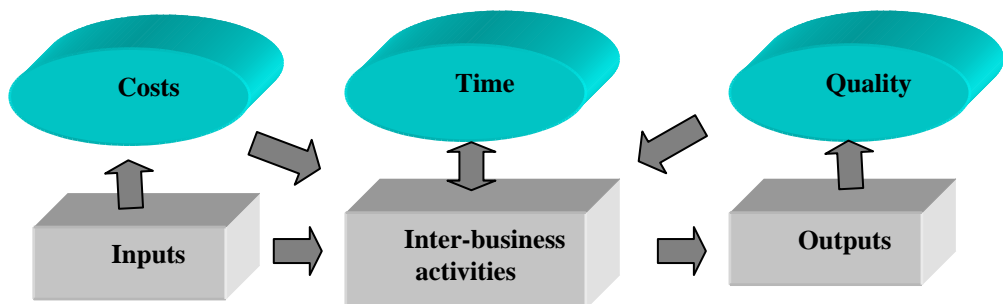


Fig.3. Relation between internal environment and determinants of costs, time and quality

#### 4.4. Cost efficiency, productivity and effectiveness

Cost efficiency is affected by the costs of the inputs, and effectiveness is affected by the quality of the outputs. It is necessary to achieve harmony between cost efficiency and effectiveness. The relationship between them two is the productivity.

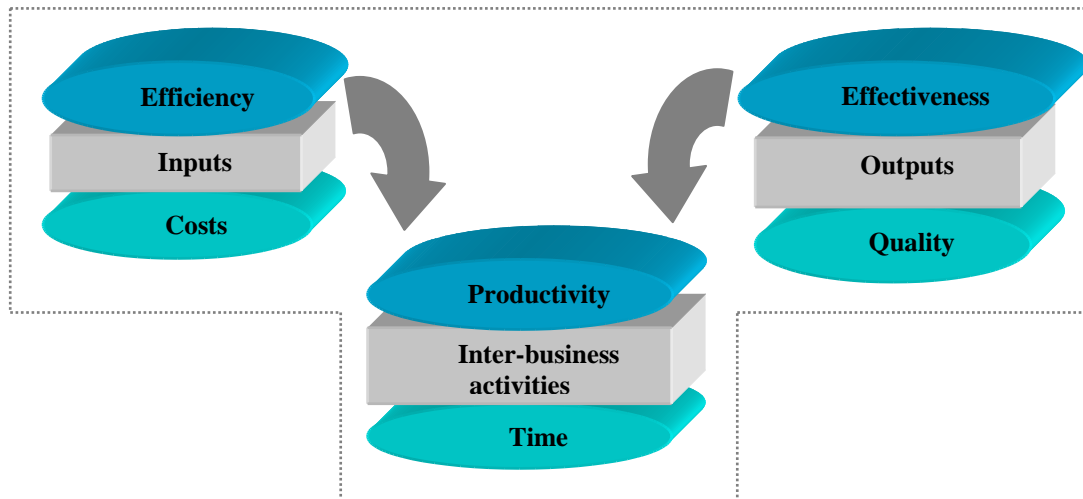


Fig.4. Relationship between cost efficiency, productivity and effectiveness

#### 4.5. Performance measurement system

Productivity, which is affected by cost efficiency and effectiveness, can be improved by improving quality and reducing cost and time. When a system is efficient, productive and effective than its performance is guaranteed.

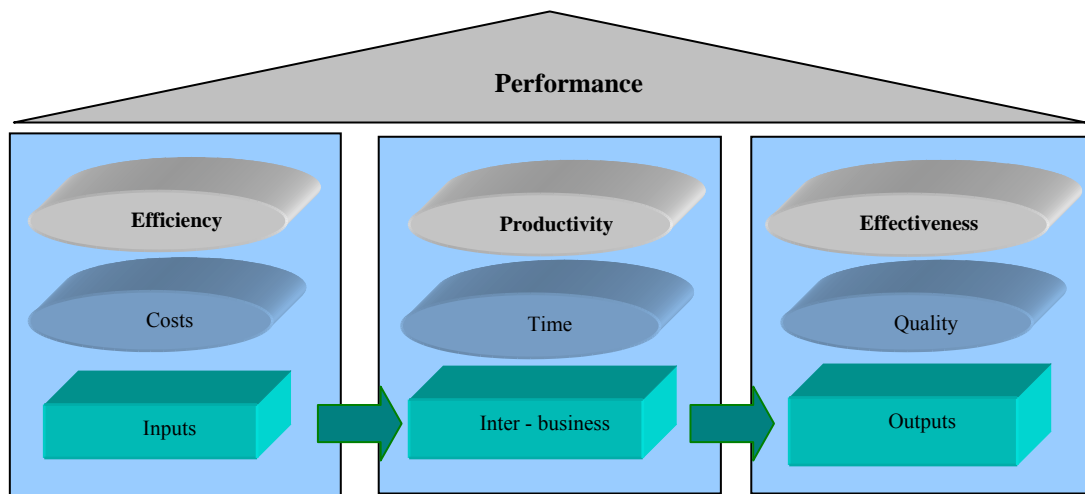


Fig.5. The whole system is affected by cost efficiency, productivity and effectiveness

#### 4.6. Performance indicators

Cost efficiency metrics are focused on inputs and costs allocation. The costs are related to the product directly or indirectly. Productivity metrics indicate the intensity of input utilization. They are related to cost efficiency and effectiveness metrics with regard to time. Effectiveness metrics are focused on measurement and control of the final product making sure that all its features (mechanical, chemical and technical) meet the customer expectations. Definitions of the effectiveness metrics are based on the final product. In the case of immaterial products it is necessary to define other characteristics which are expected by the customer.

Metrics can be divided into two groups – financial and non-financial as shows in figure 6 below:

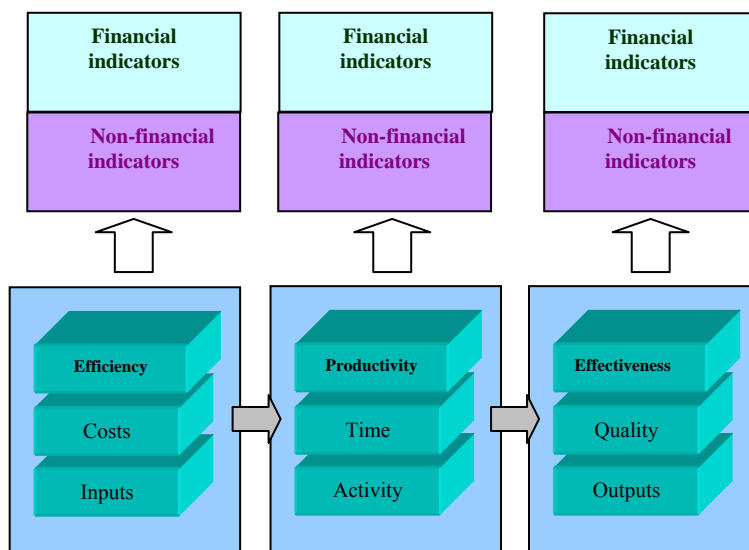
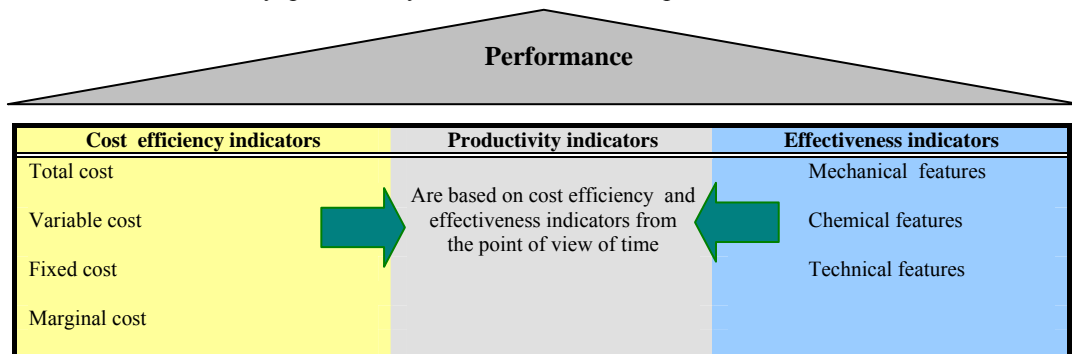


Fig.6. Financial and non-financial indicator identification

As to the selection of a range of performance measures which are appropriate to a particular company, this selection ought to be made in the light of the company's strategic intentions which will have been formed to suit the competitive environment in which it operates and the kind of business that it is. Whether the company is in the manufacturing or the service sector, in choosing an appropriate range of performance measures it will be necessary however to balance them, to make sure that one dimension or set of dimensions of performance is not stressed to the detriment of others.

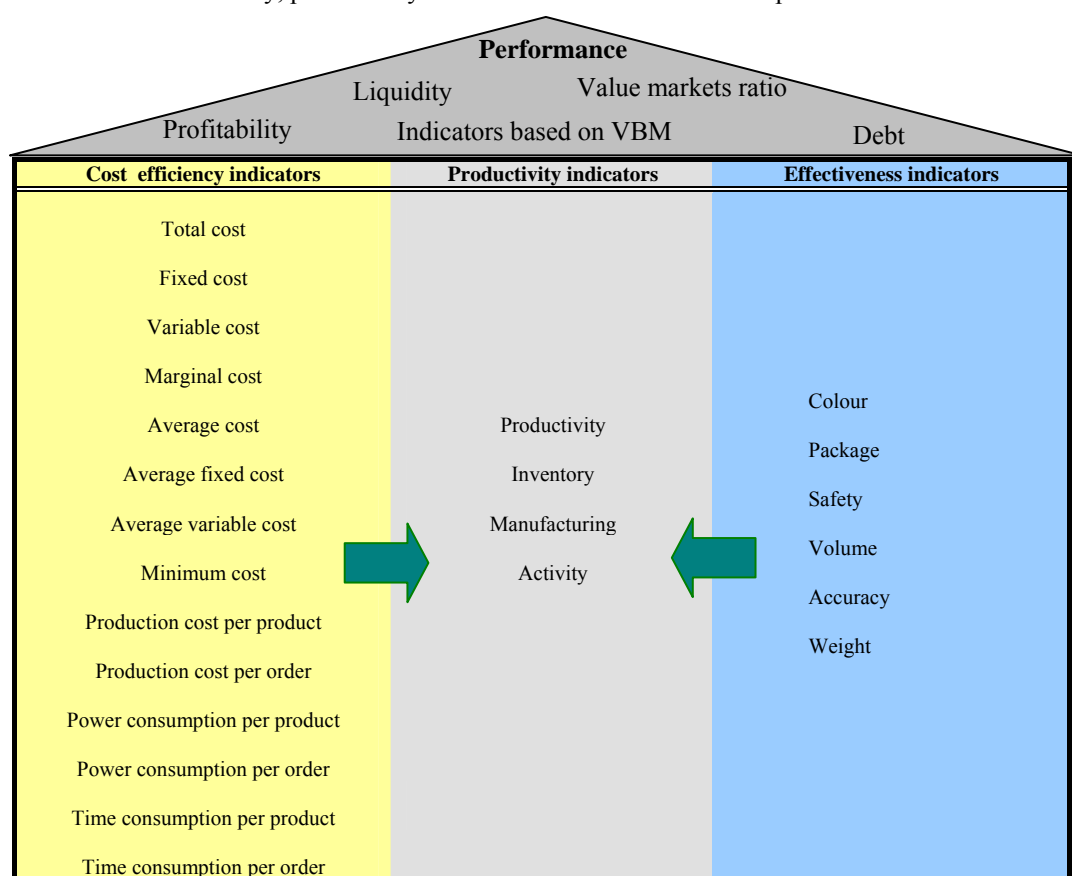
The mix chosen will in almost every instance be different. While most companies will tend to organize their accounting systems using common accounting principles, they will differ widely in the choice, or potential choice, of performance indicators.

Tab. 1. Cost efficiency, productivity and effectiveness and performance relations



It also is necessary to note, that activities which are measured by financial indicators can be also affected by activities which are measured by non-financial indicators. The border between financial and non-financial metrics is not strictly defined. Metrics or indicators which can be used for evaluation may include as shows table 2.

Tab. 2. Cost efficiency, productivity and effectiveness indicators and performance metrics



## 5. PERFORMANCE INDICATORS

### 5.1. Cost efficiency indicators

Why do firms care about costs? Clearly they must pay careful attention to costs because every dollar of cost reduces the firm's profits. But costs are important in economics for a deeper reason: firms will decide how much of a good to produce and sell depending on the price and cost of the good. More precisely, supply depends upon incremental or marginal costs.

#### 5.1.1 Total cost

Consider a firm that produces a quantity of output denoted by  $q$ . This output is produced according to some production function with capital, labour, and other inputs. The firm must of course buy these inputs in the factor markets. A profit-minded firm will keep an eagle-eye on its costs so as to maintain its profits, and it is to the firm's accountants that the task is given to calculate the total costs incurred at level of  $q$ .

$$TC = FC + VC \tag{1}$$

TC... "*Total cost*" represents the lowest total expense needed to produce each level of output  $q$ . Total cost rises as  $q$  rises.

FC... "*Fixed cost*" represents the total expense that is paid out even when no output is produced, fixed cost is unaffected by any variation in the quantity of output.

VC... "*Variable cost*" represents expenses that vary with the level of output – including raw materials, wages and fuel – and includes all costs that are not fixed.

#### 5.1.2 Fixed cost

What are the firm's fixed costs (FC)? Sometimes called "overhead" or "sunk costs", they consist of items like contractual payments for building and equipment rents, interest payments on debts, salaries of long-term employees, and so forth. These must be paid even if the firm produces no output, and they will not change if output changes. Hence, FC is the amount of cost that must be paid independently of the level of output.

#### 5.1.3 Variable cost

Variable costs (VC) are those costs that vary with the level of output. Examples include materials required to produce output, production workers to staff the production lines, fuel, light, and power to operate factories, and the like.

By definition, VC begins at zero when  $q$  is zero. It is the part of TC that grows with output, indeed, the jump in TC between any two outputs is the same as the jump in VC. Why? Because FC stays constant and cancels out in the comparison of costs between different output levels.

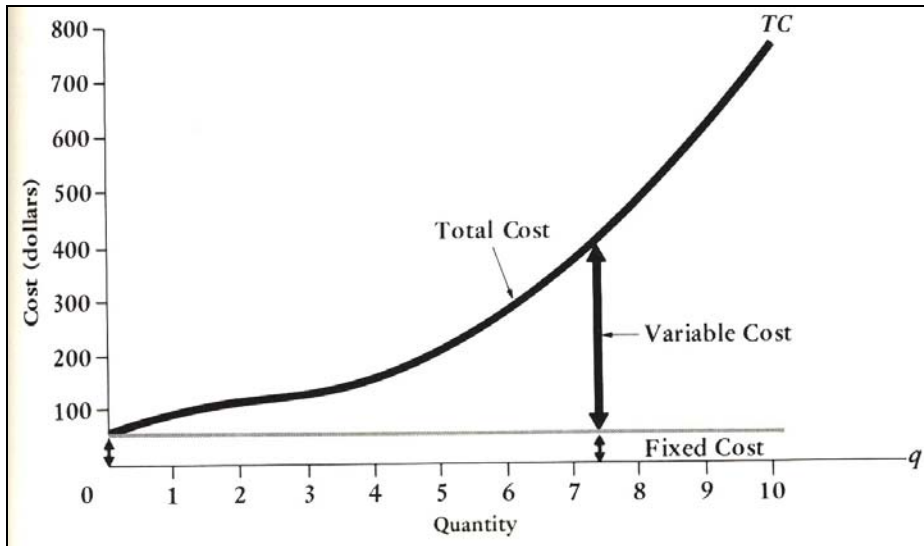


Fig.7. Total, fixed, and variable cost

#### 5.1.4 Marginal cost

The key to understanding how much a firm will want to produce and sell is its marginal cost of producing goods and services. Marginal costs (MC) denote the extra or additional cost of producing one extra unit of output. Begin by recalling that in economics the term “marginal” – whether applied to utility, cost, production, consumption, or whatever – means “incremental” or “extra”.

#### 5.1.5 Average or unit cost

One of the most important cost concepts is average cost (AC), which, when compared with price or average revenue, will allow a business to determine whether or not is making a profit. Average cost is the total cost divided by the number of units produced.

$$AC = \frac{TC}{q} \quad (2)$$

AC...Average cost

TC... Total cost

q... output

#### 5.1.6 Average fixed cost

Since total fixed cost is a constant, dividing it by an increasing output gives a steadily falling average fixed cost (AFX) curve. The dashed *black AFC* curve in Figure 8 looks like a hyperbola, approaching both axes: it drops lower and lower, approaching the horizontal axis as



the constant  $FC$  gets spread over more and more units. If we allow fractional and zero units of  $q$ ,  $AC$  starts infinitely high, as finite  $FC$  is spread over ever tinier  $q$ .

$$AFC = \frac{FC}{q} \tag{3}$$

AFC...Average fixed cost per unit  
 FC...Fixed cost  
 q... output

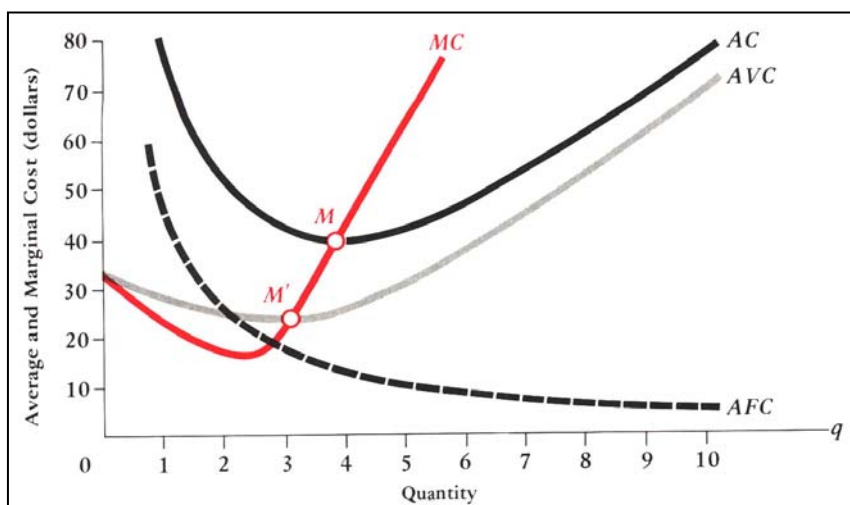


Fig.8. Total cost curve gives rise to all the other curves

### 5.1.7 Average variable cost

Average variable cost ( $AVC$ ) equals variable cost divided by output, or  $AVC = VC/q$ . The shape for  $AVC$  can be predicted from the behavior of marginal cost.

$$AVC = \frac{VC}{q} \tag{4}$$

AFC...Average variable cost per unit  
 VC...Variable cost  
 q... output

### 5.1.8 Minimum average cost

Figure 8 is a crucial economic diagram. Note the relationship between the  $MC$  curve and the  $AC$  curve - particularly the way that the  $MC$  curve cuts the minimum point of the  $AC$  curve: The  $AC$  curve is always pierced as its minimum point by the rising  $MC$  curve. The basic point to see

is that MC is below AC, and then AC must be falling. Why is this so? Because if MC is below AC, then the last unit produced costs less than the average of all the earlier units produced. If the last unit costs less than the earlier ones, then the new AC (i.e., the AC including the last unit) must be less than the old AC, so AC must be falling.

What if MC is above AC? In this case, the last unit costs more than the average of the earlier units. Hence the new average cost (the AC including the last unit) must be higher than old AC. Therefore, when MC is above AC, AC must be rising.

Finally, if MC is just equal to AC, this means that the last unit costs exactly the same as the average cost of all earlier units. Hence the new AC, the one including the last unit, is equal to the old AC; the AC curve is flat when AC equals MC.

From this discussion, we can see why a rising MC curve must cut the AC curve at its minimum point. To the left of the minimum point of the AC curve, MC is below AC, so the AC curve is falling. To the right of the AC minimum, MC is above AC, so the AC curve is rising. At the point where MC equals AC, the AC curve is flat. Hence, the MC curve cuts the AC curve at the minimum average cost.

So long as marginal cost is below average cost, it is pulling average cost down; when MC gets to be just equal to AC, AC is neither rising nor falling and is at its minimum. When MC is above AC, it is pulling AC up. Hence: at the bottom of U-shaped AC:

$$MC = AC = \text{minimum AC}$$

### 5.1.9 Efficiency ratio

The efficiency ratio, which measures the efficiency of labour or an activity over a period of time by dividing the standard hours allowed for the production by the actual hours taken is usually expressed as percentage, using the formula:

$$\text{Efficiency ratio} = \frac{\text{standard hours allowed}}{\text{actual hours worked}} \times 100 \quad (7)$$

## 5.2 Productivity indicators

As productivity indicators can be used indicators as follows: inventory indicators, productivity indicators, manufacturing (or production) indicators and activity indicators. Some of them are listed below.

### 5.2.1 Activity

Activity indicators are often used for financial analysis. Activity indicators are: Total Assets Turnover Ratio, Inventory Turnover, Accounts Receivable Turnover (ART), Days Sales Outstanding, Fixed Assets Turnover, Total Turnover, Creditors Payment Period, Average Collection Period, Asset Turnover, Capital Intensity etc.

#### *Total Assets Turnover Ratio*

The asset turnover ratio simply compares the turnover with the assets that the business has used to generate that turnover. In its simplest terms, we are just saying that for every dollar of assets, the turnover is x dollar. The formula for total asset turnover is:

$$\text{Total Asset Turnover} = \frac{\text{Turnover}}{\text{Total Assets}}$$

#### *Accounts Receivable Turnover (ART)*

The receivables turnover ratio is an activity ratio, measuring how efficiently a firm uses its assets. The average duration of an account receivable, is equal to total credit sales divided by accounts receivable. It indicates the liquidity of the company's receivables in days.

$$\text{Accounts Receivable Turnover} = \frac{\text{Average Gross Receivables}}{\text{Annual Net Sales} / 365}$$

#### *Days Sales Outstanding (DSO)*

Indicates how the firm handles obligations of its suppliers. A low figure means the company collects its outstanding receivables quickly.

$$\text{Days Sales Outstanding} = \frac{\text{Ending Accounts Payable}}{\text{Purchases} / 365}$$

### **5.2.2 Inventory**

#### *Days Sales Inventory*

A financial measure of a company's performance that gives investors an idea of how long it takes a company to turn its raw materials into sales. The lower (shorter) the DSI the better, but it is important to note that the typical DSI will vary from one industry to another.

$$\text{Days Sales Inventory} = \frac{\text{Ending Inventory}}{\text{Cost of Goods Sold} / 365}$$

#### *Inventory Turnover*

A ratio showing how many times a company's inventory is sold and replaced over a period. It indicates the liquidity of the inventory.

$$\text{Inventory turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

#### *Inventory Turnover in Days*

Inventory Turnover indicates the liquidity of the inventory in days. This ratio should be compared against industry averages. A low turnover implies poor sales and, therefore, excess inventory. A high ratio implies either strong sales or ineffective buying.

$$\text{Inventory turnover} = \frac{\text{Average Inventory}}{\text{Cost of Goods Sold} / 365}$$

### **5.2.3 Productivity**

Productivity has been generally defined as a ratio of measure of output to a measure of some or all of the resources used to produce this output. Defined in this way, one or a number of inputs measures can be taken and compared with one or a number of output measures.

### **5.2.4 Manufacturing**

Whether the company is in the manufacturing or the service sector, in choosing an appropriate range of performance measures it will be necessary however to balance them, to make sure that one dimension or set of dimensions of performance is not stressed to the detriment of others. The mix chosen will in almost every instance be different. Authors from differing management disciplines tend to categorize the various performance indicators that are available as follows:

- Flexibility
- Innovation
- Environment etc.

### **5.3 Effectiveness indicators**

Indicators used for effectiveness evaluation are indicators of quality of output which are measuring the features of the product.

#### **Quality of output**

Indicators of quality of output can be divided into three basic groups – mechanical, chemical and technical. Those groups may include:

- Colour
- Package
- Safety
- Volume
- Accuracy
- Weight
- Quality of service etc.

### **5.4 Performance indicators**

Performance indicators can be divided into several groups – profitability, liquidity, debt, value markets ratios and at last not at least the Value Based indicators.

#### **5.4.1 Profitability**

Profitability ratios measure management's ability to control expenses and to earn a return on the resources committed to the business. Profitability indicators are: Return on Sales (ROS), Return on Assets (ROA), Return on Investment (ROI), Return on Equity (ROE), Return of Capital Employed (ROCE) etc.

### *Return on Sales (ROS)*

It is a measure of net income dollars generated by each dollar of sales. This indicator is also called „Net Profit Margin“.

$$\text{Return on Sales} = \frac{\text{Net Income}^*}{\text{Net Sales}}$$

\* Refinements to the net income figure can make it more accurate than this ratio computation. They could include removal of equity earnings from investments, "other income" and "other expense" items as well as minority share of earnings and nonrecurring items.

### *Return on Assets (ROA)*

Measures the company's ability to utilize its assets to create profits.

$$\text{Return on Assets} = \frac{\text{Net Income}^*}{\frac{\text{Beginning} + \text{Ending Total Assets}}{2}}$$

### *Return on Investment (ROI)*

Return on investment is a very popular metric because of its versatility and simplicity. Measures the income earned on the invested capital.

$$\text{Return on Investment} = \frac{\text{Net Income}^*}{\text{Long - term Liabilities} + \text{Equity}}$$

### *Return on Equity (ROE)*

Essentially, ROE reveals how much profit a company generates with the money shareholders have invested in it. It measures the income earned on the shareholder's investment in the business.

$$\text{Return on Enquity} = \frac{\text{Net Income}^*}{\text{Enquity}}$$

## **5.4.2 Liquidity**

The following liquidity ratios are all designed to measure a company's ability to cover its short-term obligations. Companies will generally pay their interest payments and other short-term debts with current assets. Therefore, it is essential that a firm have an adequate surplus of current assets in order to meet their current liabilities. If a company has only illiquid assets, it may not be able to make payments on their debts. To measure a firm's ability to meet such short-term obligations, various ratios have been developed.

### *Current Ratio*

Provides an indication of the liquidity of the business by comparing the amount of current assets to current liabilities. A business's current assets generally consist of cash, marketable securities, accounts receivable, and inventories. Current liabilities include accounts payable,

current maturities of long-term debt, accrued income taxes, and other accrued expenses that are due within one year. In general, businesses prefer to have at least one dollar of current assets for every dollar of current liabilities. However, the normal current ratio fluctuates from industry to industry. A current ratio significantly higher than the industry average could indicate the existence of redundant assets. Conversely, a current ratio significantly lower than the industry average could indicate a lack of liquidity.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

#### *Quick Asset Ratio*

Sometimes called as Quick Ratio or Acid test. It is a measurement of the liquidity position of the business. The quick ratio compares the cash plus cash equivalents and accounts receivable to the current liabilities. The primary difference between the current ratio and the quick ratio is the quick ratio does not include inventory and prepaid expenses in the calculation. Consequently, a business's quick ratio will be lower than its current ratio. It is a stringent test of liquidity.

$$\text{Quick Asset Ratio} = \frac{\text{Cash} + \text{Marketable Securities} + \text{Accounts Receivable}}{\text{Current Liabilities}}$$

#### *Cash Position Ratio*

Indicates a conservative view of liquidity such as when a company has pledged its receivables and its inventory, or the analyst suspect's severe liquidity problems with inventory and receivables.

$$\text{Cash Position Ratio} = \frac{\text{Cash Equivalents} + \text{Marketable Securities e}}{\text{Current Liabilities}}$$

### **5.4.3 Debt**

Debt indicators are as follows: Total Debt to Total Assets, Debt to Equity, Times Interest Earned Ratio (TIE), Long-term debt to Net Working Capital, Debt Equity Ratio, Fixed Charge Coverage, EBITDA, Cash flow debt, Cash Flow Coverage Ratio, Average Collection Period (ACP) etc. Some or those indicators are described below.

#### *Total Debt to Total Assets*

This indicator provides information about the company's ability to absorb asset reductions arising from losses without jeopardizing the interest of creditors.

$$\text{Total Debt to Total Assets} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

#### *Debt to Equity*

It indicates how well creditors are protected in case of the company's insolvency.

$$\text{Debt to Equity} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

#### *Times Interest Earned Ratio (TIE)*

Times Interest Earned Ratio indicates a company's capacity to meet interest payments. For calculation is used EBIT - Earnings Before Interest and Taxes. Indicator is also called "Interest Coverage Ratio".

$$\text{Times Interest Earned Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

#### *Long-term Debt to Net Working Capital*

Long-term Debt to Net Working Capital provides insight into the ability to pay long term debt from current assets after paying current liabilities.

$$\text{Long Term Debt to Net Working Capital} = \frac{\text{Long - term Debt}}{\text{Current Assets - Current Liabilities}}$$

### **5.4.4 Value market ratios**

Indicators of Value Market Ratio can be used Price Earnings Ratio (P/E), Earnings per Share (EPS), Book Value (BV), Dividend Yield, Payout Ratio, Price Book Value, P/BV, P/CE etc.

#### *Price Earnings Ratio (P/E)*

A valuation ratio of a company's current share price compared to its per-share earnings.

$$\text{Price Earnings Ratio} = \frac{\text{Market Value per Share}}{\text{Earnings per Share}}$$

#### *Earnings per Share (EPS)*

Earnings per share is a traditional method used for determining corporate value and can be calculated by subtracting the dividends on preferred stock from net income, and dividing the result by the combination of all outstanding common shares and all common stock equivalents.

$$\text{Earnings per Share} = \frac{\text{Net Income - Dividends on Preferred Stock}}{\text{Number of Outstanding Common Shares + Common Stock Equivalents}}$$

#### *Book Value (BV)*

This indicator is calculated as the book value of a company divided by the number of shares outstanding.

$$\text{Book Value} = \frac{\text{Stockholders Equity - Preferred Stock}}{\text{Average Outstanding Shares}}$$

### 5.4.5 Modern indicators (based on VBM)

Value Based Management is the management approach that ensures corporations are run consistently on value. It is useful to understand that Value Based Management includes all three of the following:

1. Creating Value – ways to actually increase or generate maximum future value
2. Managing for Value – governance, change management, organizational culture, communication, leadership and
3. Measuring Value – valuation

Indicator used for valuation can be as follows: Discounted Cash Flow, Market Value Added (MVA), Total Shareholder Return (TSR), Economic Value Added (EVA), Cash Flow Return on Investment (CFROI), Return on Investment Capital (ROIC), Value Creation Index (VCI), Cash Value Added (CVA), Excess Return, Total Shareholder Return (TSR), Shareholder Value Added (SVA), Cash Return on Gross Assets (GROGA) etc. Some of those indicators are described below.

#### *Discounted Cash Flow (DCF)*

A valuation method used to estimate the attractiveness of an investment opportunity. Discounted cash flow (DCF) analysis uses future free cash flow projections and discounts them (most often using the weighted average cost of capital) to arrive at a present value, which is used to evaluate the potential for investment. If the value arrived at through DCF analysis is higher than the current cost of the investment, the opportunity may be a good one.

$$\text{Discounted Cash Flow} = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n}$$

CF... Cash Flow

r... discount rate (WACC)

#### *Value Creation Index (VCI)*

The Value Creation Index (VCI) is a tool designed to quantify the link between an organization's non-financial performance and its valuation in the markets. Traditional methods of assessing organizational performance are no longer adequate in today's economy. Stock price is less and less determined by earnings or asset base. Value Creation in today's companies is increasingly represented in the intangible drivers like innovation, people, ideas, and brand. Yet these non-financial factors for creating value are difficult to quantify, rarely acknowledged in accounting methods, and are not adequately measured, managed or reported on by organizations.

The Cap Gemini Ernst & Young (CGE&Y) Center for Business Innovation (CBI) created a tool to quantify the link between an organization's non-financial performance, creating value and a firm's valuation in the markets. The Value Creation Indices not only quantify the impact of non-financial performance on market value, but also identify the specific intangibles that drive value for a given industry. Models have been created for a number of industries including financial services, airlines, pharmaceuticals, telecommunications, and others.



While the crucial non-financial value drivers vary by industry, the value creation research team has settled upon some critical categories of intangible performance that determine corporate value creation:

- Innovation
- Customer relations
- Management capabilities
- Alliances
- Technology
- Brand value
- Employee relations
- Environmental and community issues

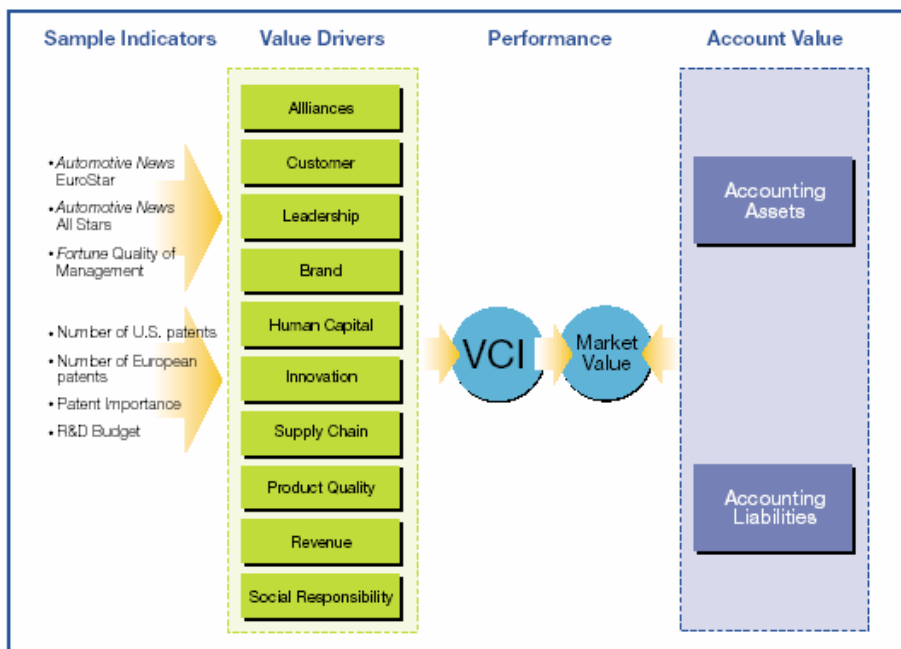


Fig.9. Value Creation Index concept – Source: Gap Gemini & Young, 2003

### *Economic Value Added (EVA)*

Economic Value Added is a financial performance method to calculate the true economic profit of a corporation. EVA is an estimate of the amount by which earnings exceed or fall short of the required minimum rate of return for shareholders or lenders at comparable risk. EVA can be calculated as net operating after taxes profit minus a charge for the opportunity cost of the capital invested. The formula for calculating EVA is as follows:

$$EVA = \text{Net Operating Profit After Taxes (NOPAT)} - (\text{Capital} * \text{Cost of Capital})$$

Unlike Market-based measures, such as MVA, EVA can be calculated at divisional (Strategic Business Unit) level. Unlike Stock measures, EVA is a flow and can be used for

performance evaluation over time. Unlike accounting profit, such as EBIT, Net Income and EPS, EVA is Economic and is based on the idea that a business must cover both the operating costs AND the capital costs.

EVA can be used for the following purposes: setting organizational goals, performance measurement, determining bonuses, communication with shareholders and investors, motivation of managers, capital budgeting, corporate valuation and analyzing equity securities.

## 6. CONCLUSION

Cost efficiency should not be confused with effectiveness. An activity is effective only when it is efficient. Effectiveness warrants the right output only when an effective input is provided. Productivity, which is affected by cost efficiency and effectiveness, can be improved by improving quality and reducing cost and time. Productivity, which is affected by cost efficiency and effectiveness, can be improved by improving quality and reducing cost and time. When a system is efficient, productive and effective than its performance is guaranteed.

## References

- [1] ATKINSON A. A., BANKER R. D., KAPLAN R. S., YOUNG M. S.: *Management Accounting*, Second edition, New Jersey. Prentice Hall International 2000.
- [2] AUSTIN R. D.: *Measuring and Managing Performance in Organizations*. Dorset House Publishing Company, Incorporated, 1996.
- [3] BRICKELEY J. and co.: *Designing Organizations to Create Value: From Strategy to Structure*. McGraw-Hill, 1997.
- [4] COBIT™ *Executive Summary*, ISACF, IT Governance Institute, 2000.
- [5] *Dictionary of Accounting*. Oxford University Press. Second edition. New York 1999.
- [6] DRUDY C.: *Management & Cost Accounting*, Fifth edition, Thomson Learning, London 2000.
- [7] ERNST & YOUNG: *Measuring the Future*, Cap Gemini, Center for Business Innovation, Cambridge 2000.
- [8] FREIBERG F.: *Cash – Flow: řízení likvidity podniku*. Management Press. Praha 1993.
- [9] FREIBERG F.: *Finanční controlling*. Koncepce finanční stability firmy. Management Press, Praha 1996.
- [10] HARBOUR J. L.: *Basis of Performance measurement*. Quality Resources, 1997.
- [11] HEŘMAN J.: *Řízení výroby*. Melandrium. Praha, 2001.
- [12] <http://www.bettermanagement.com>
- [13] <http://www.cfo.com>
- [14] <http://www.bsc.com>
- [15] <http://www.efqm.org>
- [16] <http://www.investopedia.com>
- [17] <http://www.swift.com>
- [18] <http://www.treasurers.org>
- [19] <http://www.valuebasedmanagement.net>
- [20] <http://www.kip.zcu.cz>
- [21] <http://www.wordreference.com/definition/>

- [22] KAPLAN R. S., NORTON D. P.: *Balanced Scorecard. Strategický systém měření výkonnosti podniku*. 3. vydání. Management press, Praha 2002.
- [23] KAPLAN R.S., ROBERT S., NORTON D. P.: *Linking the Balanced Scorecard to Strategy*, California Management Review. Vol. 39. No I. Fall 1996.
- [24] KAVAN M.: *Výrobní a provozní management*. Grada. Praha 2002.
- [25] KINGHT J.A. *Value Based Management*, Mc Graw-Hill, 1997.
- [26] KISLINGEROVÁ E. a kol.: *Manažerské finance*. C. H. Beck, Praha 2004.
- [27] KISLINGEROVÁ E.: *Oceňování podniku*. 2. přepracované a doplněné vydání. C. H. Beck, Praha 2001.
- [28] MAŘÍKOVÁ P., MAŘÍK M.: *Moderní metody hodnocení výkonnosti a oceňování podniku*. Ekopress. Praha 2005.
- [29] *Measuring Corporate Performance*, by Niall Lothian, BA, CA, Heriot-Watt University, published by The Chartered Institute of Management Accountants.
- [30] NEUMAIEROVÁ I., NEUMAIER I.: *Výkonnost a tržní hodnota firmy*. Grada, Praha 2002.
- [31] PAVELKOVÁ D., KNÁPKOVÁ A.: *Výkonnost podniku z pohledu finančního manažera*. Linde. Praha 2005.
- [32] RAPPAPORT A.: *Creating shareholder value* . The Free Press, New York 1998.
- [33] REMENYI D., MONEY A., SHEWOOD-SMITH M.: *The effective measurement and management of IT costs and benefits – secon edition*. Butterworth – Heineman, Oxford 2000. page 3.
- [34] SAMUELSON P. A., NORDHAUS W. D.: *Economics*. Thirteenth Edition. McGraw-Hill Book Company. New York 1989.
- [35] SCHEER A.-W. (EDS): *Corporate Performance Management (Engl.)*, Springer – Verlag GmbH Heidelberg 2006.
- [36] SCHNIEDERJANS M, HAMEKER J., SCHNEIDERJANS A.: *Information technology investment*. World Scientific Publishing Co., London 2004.
- [37] SHAW A.: *A Guide to Performance Measurement and Non-Financial Indicators*. <http://www.fpm.com/journal/mattison.htm>
- [38] SYNEK M. a kol.: *Podniková Ekonomika*. První vydání. C. H. Beck, Praha 1999.
- [39] TOMEK G., VÁVROVÁ V.: *Řízení výroby*. Druhé rozšířené vydání. Grada. Praha 2000.
- [40] UČEŇ P.: *Metriky v informatice, Jak objektivně zjistit přínosy informačního systému*. 1st edition, Grada, Praha, 2001. 140 p. ISBN 80-247-0080-8.
- [41] VACÍK M.: *Současné komplexní metody hodnocení firem*. Praha 2003.
- [42] VALACH J. a kol.: *Finanční řízení podniku*. Druhé aktualizované a rozšířené vydání. Ekopress, Praha 2003.
- [43] VALACH J.: *Investiční rozhodování a dlouhodobé financování*. Ekopress. Praha 2001.