

The application of systems of financial metrics in financial analysis

Ing. PhD. Sylvia Jenčová,
Faculty of management
Department of Finance and Accounting
University of Presov in Presov
Konštantínova 16, 080 01 Prešov, Slovakia
sylvia.jencova@unipo.sk

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Abstract

The fundamental factor for the interpretation of a company's success is to quantify the effects of the analytical indicators determining the overall profitability of the business as an entity. The overall state of the economy determines the ability of businesses to achieve target profitability. In the present context, to some extent in the area of financial management in general, as a subsystem of the overall system of corporate management, use of these financial indicators is imperative.

The aim of this paper is to highlight the relevance and importance of using pyramid models, involving financial metrics with considerable expressive ability, in the financial management of businesses.

Key words Model, Profitability Indicator, Return on Assets

INTRODUCTION

The current competitive environment allows for the healthy functioning of firms that dominate trade and financial trends. A formalized method that allows for a determination of the financial situation, that is the overall financial health of a company, is its thorough financial and economic analysis, whether in terms of ex post or ex ante. One of the cardinal tasks of the financial analysis of any business is the analytical and systematic approach to analyze their individual activities. The purpose of a financial analysis is to prepare the groundwork for quality decision making and functioning of a company.

The most famous pyramid diagram system was first developed and used by the multinational chemical company Du Pont de Nemours and is called Du Pont Decomposition. The designation of Du Pont does not identify the author of the model, but rather the company, El Du Pont de Nemours and Company, which in 1802 by founded by Eleuthera Irene du Pont de Nemours. By Soucek (2010), a company that has the potential to achieve the best results is undoubtedly such a company that is able to best adapt to its environment, which currently means the global environment. Characterizing a successful business is difficult. Rating a successful business under one criterion, or by using a few criteria, can be quite misleading. Practice shows that this analysis is, while it is more appropriate to use indicators, for the overall assessment of effectiveness the most appropriate indicator of profit. By Zalai (2007, p.25), a system of evaluative indicators for such a company means a set of indicators for constructing, with respect to the requirement of a most faithful reproduction and descriptions, the examined economic reality. Logically interrelated sets of selected indicators are used as system indicators.

SYSTEM OF FINANCIAL INDICATORS

When financial and economic analyses are applied, managers use financial indicators, which are grouped into a logical narrative matrix known as a matrix of system indicators. Indicators arranged next to each other are known as a parallel system of indicators, each indicator being in the system at the same semantic level and in a pyramid system of indices, where the progress bar is integrated from the most synthetic down. By Máče (2006, p. 45), one should evaluate a company's value by applying a pyramid system to interpret indicators on the one hand, including taxation of investments owned by the business owner, and secondly, to estimate the market value of the company's capital, that is to say its intrinsic value. It is the analyzed business entity that represents the owner of the invested funds net asset value, including net asset value per share. To study the impact of determining factors on synthetic factors, there are a variety of methods. The most widely used method is the chain-appointed logarithmic method, also called the functional integral method.

By Jenčová (2011), the sense pyramid system is explained by conversion of the behavior of the top pointer and then quantifying the impact of individual partial sections of indicators for the conversion of the synthetic indicator. Pyramidal systems of indicators are characterized by the (zero-order variable, synthetic, criteria, integrating) indicator that defines the area's synthetic character. Subsequent stages of the pyramid gradually degrade on partial analytical indicators.

We then quantify the degree of degradation and weight of synthetic indicators. Indicators are linked as additive, multiplicative and with mixed bonds. Vertical linkages are causal in nature. Horizontal linkages associated with indicators are identified as complementary. Use of these linkages on each of the analytical quantification indicators changes the synthetic indicator. FIG. 1 shows a general pyramidal decomposition in a simplified form. The Peak Indicator, that is the synthetic indicator is an indicator with zero order variables; below it are indicators of the first order, which gradually decompose further indicators of lower order.

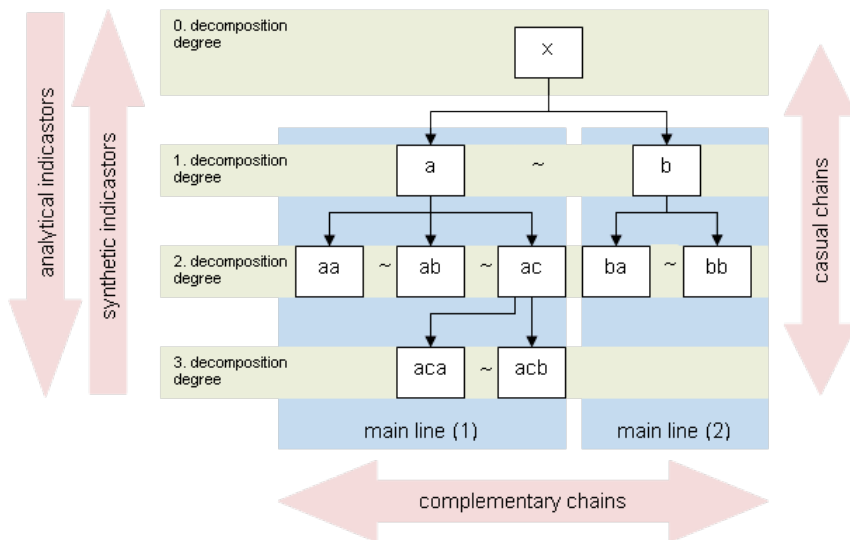


Figure 1 General model of pyramidal system

Source: (Kotulič, 2007)

By Sedlacek (2007, p.82) using the logarithmic method is possible in a pyramid system of indicators:

- to quantify the intensity of the impact of the various sub-indicators on the top indicator explained by the development of the financial situation of the company between periods
- assess differences between actual and forecast values of the peak indicator
- convert comparisons with the performance of competitors
- monitor company performance differences compared to the situation characteristic of the department, or vis-à-vis best in the art
- predict future developments arising from the causal interdependence of indicators

Implementation of logarithmic methods in the analysis of a company is based on the indices of individual difference analysis indicators. These are interconnected multiplicative and mutual ties that take their values from the application of the logarithmic method (Kucharčíková 2007).

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Brown's first employer was General Electric, which he joined in 1903. In this job he used his expert knowledge of engineering. In 1909, he joined Du Pont first as a trader in explosives. By 1912, he was working as an analyst at Du Pont's headquarters. In 1914, he became assistant director and in 1918 as the CFO he was appointed to Director's Council and Executive Committee of the company. It was in 1912 that he created a model for the decomposition of return on assets (ROA), later known as the DuPont model. ROA is not an ideal tool for decision making by investors because it does not distinguish between capital appreciation for shareholders and creditors. This task is performed better by ROE, that FD Brown created in 1919. Disintegration of composition lies in the profit margin, asset turnover and financial leverage (Marek 2009).

$$ROE_{\text{EAT}} = \frac{\text{EAT}}{E} = ROA \times \frac{A}{E} = \frac{\text{EAT}}{\text{EBT}} \times \frac{\text{EBIT}}{S} \times \frac{S}{A} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{A}{E}$$

Use of the Du Pont equation is needed to quantify the decomposition of ROA or ROE. Decomposition of profitability of assets reflects the close relationship between profitability and inventory turnover ratio (how many times the property in question turns in annual sales, how many euros in sales produce one euro of the businesses' assets), that is the essential productive force of the company is given by the multiplicative product of financial indicators of profitability and sales turnover of assets. If we want to increase the profitability of assets, we must act on the turnover of assets or N profitability in the direction of improvement.

Decomposition is focused on ROE, return on common equity, which is determined by eight indicators. Senior ROE (Return on Common Equity) results in two branches and three orders of magnitude. The left branch metrics quantifies seven ROA (Returns on Assets) as the basic earning power, ROS (Return on Sales), OA (Sales to Total Assets), Total Assets Turnover Ratio, EAT (Earnings After Taxes), Sales and Assets. The right branch represents the shares of total assets, respectively. Overall capital that is invested in equity requires leverage metrics and Financial Gearing, which is the reciprocal of the equity Ratio. In the DuPont model these are implemented as combined custody. The multiplicative product of the bond is applied between indicators of profitability of assets and debt ratios in the first stage of decomposition.

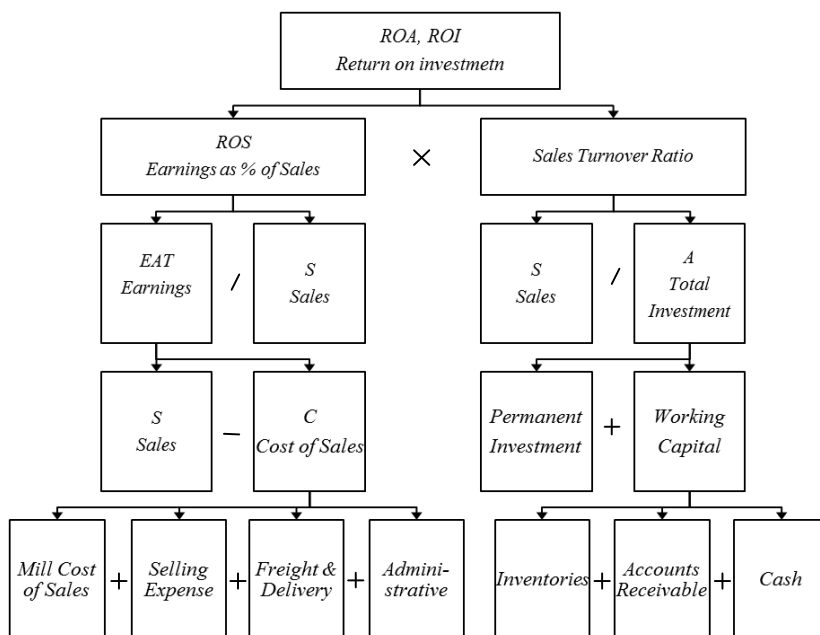


Figure 2 Du Pontov model ROA
(Source: Marek, P. 2009.)

PYRAMIDAL SYSTEM OF INDICES FOR SELECTED PRODUCTION CORPORATIONS

The choice of method used to solve this problem depends on the design of the analytical model, in particular on the links that exist between variables whose deviation analysis and indicators (factors) make assumption on causality. Enterprise-level financial managers generally utilize pre-profit additive, multiplicative and combined types of links. These bonds may be applied, for example by incremental indices, or other functional, logarithmic, and integral methods.

Business entities may be defined by a pyramid model INFA (Fig.3), on the basis of the financial statement balance sheets, and profit and loss accounting. The upper part of the pyramidal system of proportional financial indicators includes indicators that determine output sizes, that is total production of the firm, which in this form are not dependent on fiscal and financial policy. The center of the model is represented by the output power of the base. In the bottom of the pyramid system indicators represent determinant methods for allocating company production. Financial balance is given by liquidity conditions, the structure of assets and liabilities in terms of their life expectancy. Asset utilization is the upper part of the pyramid model and the use of liabilities is the lower part of the pyramid model called INFA.

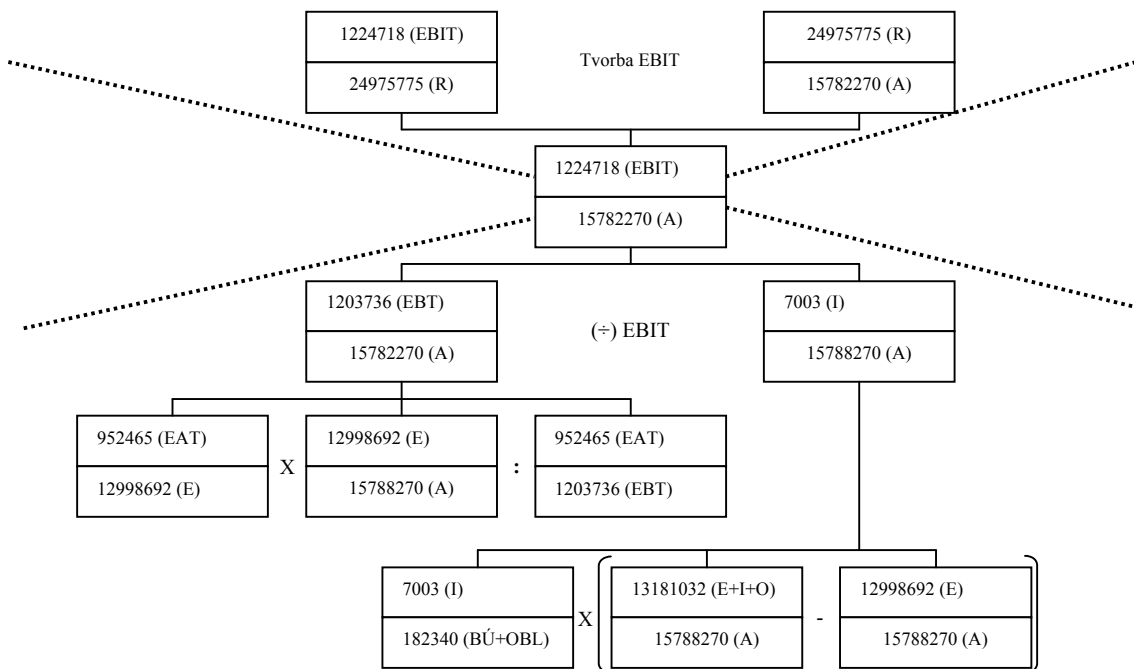


Figure 3 Model INFA
Source: Own processing

EAT(Earnings After Taxes), EBT (Earnings Before Taxes), EBIT (Earnings Before Interest and Taxes)
R (Revenue), A (Assets), E (Equity), I (Interest), ROS (Return on sales), ROA (Return on assets),
ROI (Return on Investment), ROE (Return on common equity)

CONCLUSION

In this paper a pyramidal system of indicators and methods was applied to quantify the impact of determining factors that are used in several areas of a business entity. For the expert, accountant or financial manager, the implementation of system variables is of great importance. Systems of financial metrics assist financial managers in generating development concepts and options strategies, as well as in planning all financial aspects of an enterprise, whether in the short or long term. Therefore, these systems should be given proper attention in any company. This is especially true with management companies, which should increasingly utilize financial models within their financial and economic analyses. Defining relationships has the greatest explanatory power with the application of appropriate methods to quantify the impact of determining factors.

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