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MAIN VALUE-BASED MANAGEMENT MODELS: CHARACTERISTICS AND CALCULATION ALGORITHM

ОСНОВІНІ МОДЕЛІ VALUE BASE MANAGEMENT: ХАРАКТЕРИСТИКА ТА АЛГОРИТМ РОЗРАХУНКУ

Анотація: *У статті досліджено основні моделі VBM, що застосовуються для оцінювання ефективності діяльності та максимізації вартості корпоративного підприємства. Проаналізовано ключові показники, які використовуються в межах зазначених моделей, визначено їх переваги та обмеження. Обґрунтовано, що жоден з показників не може вважатися універсальним інструментом оцінювання ефективності діяльності компанії, оскільки відображає лише окремі аспекти створення вартості. Доведено необхідність застосування комплексного підходу до оцінювання ефективності діяльності корпоративного підприємства, який передбачає поєднання кількох показників.*

Abstract: *The article examines the main models of Value-Based Management (VBM) used to evaluate the performance and maximize the value of a corporate enterprise. The key indicators applied within these models are analyzed, and their advantages and limitations are identified. It is substantiated that none of the existing indicators can be considered a universal tool for evaluating the performance of a corporate enterprise, as each of them reflects only certain aspects of value creation.*

The study proves the feasibility of applying a comprehensive approach to evaluating the performance of a corporate enterprise, which involves the use of several indicators. It is established that the application of such an approach makes it possible to compare the results obtained using different evaluation methods and determine their generalized value. This contributes to increasing the

informativeness of the analysis results and improving the effectiveness of their practical application in the process of managerial decision-making by the management of a corporate enterprise.

It is also proven that the selection of an appropriate model should be carried out taking into account a set of factors inherent to a particular enterprise, as well as external factors. In particular, it is necessary to consider the specifics and field of activity of the corporate enterprise, its capital intensity, and the overall market situation. At the same time, when selecting indicators, attention should be paid to their clarity, informativeness, practicality of application, and their influence on managerial decision-making.

Keywords: *value base management, models value base management, value added, market value added, shareholder value added, cash value added, cash flow return on investments*

Ключові слова: *управління вартісною базою, моделі управління вартісною базою, додана вартість, ринкова додана вартість, додана вартість для акціонерів, грошова додана вартість, рентабельність інвестицій у грошовий потік*

Problem Statement. Value-Based Management (VBM) is an effective approach to managing corporate enterprises aimed at maximizing company value and improving the efficiency of managerial decision-making. Its application corresponds to modern market requirements; however, the implementation of this concept at domestic enterprises is accompanied by a number of challenges related to the complexity of selecting appropriate indicators and models for performance evaluation. Modern VBM models employ various financial and economic indicators, none of which can be considered universal, since each reflects only certain aspects of value creation.

Analysis of Recent Research and Publications. The concept of Value-Based Management has been widely studied by both domestic and foreign scholars, including S. Young und S. O'Byrne [2], M. Rapp [12], G. Arnold [1], B. Stewart [6], O. Tereshchenko und L. Kostyrko [4], H. Chyzhykov [7], N. R. Jürgen [11, 13], S. Pylypenko [9], I. Kreidych [8],V. Chernova [5], P. M. Tripathi, V. Chotia, U. Solanki, R. Meena, V. Khandelwal [14]. Their research focuses on various VBM models and evaluation indicators such as EVA, MVA, SVA, and CFROI. The results of these studies confirm the practical significance of the VBM concept and its advantages compared to traditional performance evaluation indicators. At the same time, they point to certain limitations of individual models in reflecting the overall value of an enterprise. Despite numerous studies in this area, further theoretical research is required, as well as clarification of practical aspects related to the selection of an optimal combination of indicators within a comprehensive approach that would ensure a more justified assessment of performance and improve the quality of managerial decision-making.

Research Objective. The purpose of the article is to analyze the main Value-Based Management models and the performance indicators used within them; to determine their advantages and limitations; and to substantiate the feasibility of applying a comprehensive approach to evaluating the performance of corporate enterprises. Thus, there is a need to take a comprehensive approach to enhancing the informativeness of evaluating the effectiveness of improving the validity of managerial decisions through the grouping and integration of indicators.

Presentation of the Main Research Findings. To assess the value of corporate enterprises, one should pay attention to a number of methods based on the grouping of a number of indicators. In the scientific literature, such methods are called an integrated indicator that fully reflects the value of the company. The most widely used among them are Economic Value Added (EVA), Market Value Added (MVA), Shareholder Value Added (SVA), Cash Value Added (CVA), as well as investment return based on Cash Flow Return on Investment (CFROI) [1].

EVA is the accounting residual profit of a period. It shows whether the returns are sufficient to cover all expenses incurred during the period, including the costs of equity and debt. Economic value added in its current form is not the only statistic available according to a comparison of interest rates in the USA, UK, Euro Zone, Japan, Poland, Romania, Hungary, and Croatia. The existing EVA metric should be altered to account for the research that was done and for all markets, not only stable ones [2].

When calculating EVA, the focus is not on net income, but on operating performance—NOPATAN (Net Operating Profit After Taxes, after adjustments), which is generated through the product program in the sales market and through the efficient execution of the value creation process. From this, the cost of capital must be deducted, consisting of the costs of debt and equity. The cost of equity corresponds to the return expectations of equity investors. Only after all claims of the other stakeholders—i.e., employees, suppliers, lenders, the state, etc.—have been satisfied is a residual or excess profit achieved from the perspective of the equity investors, which accrues to them.

By taking into account the cost of equity, EVA links the return requirements of equity investors with the company's operational performance [3].

EVA can be calculated using either the capital charge formula or the value spread formula:

$$EVA = NOPAT_t - IC_{t-1}\, xWACC, \quad (1)$$

where:

NOPAT (Net Operating Profit After Taxes) – net operating profit after taxes but before interest payments on borrowings;

IC_{t-1} (Investment Capital) – invested capital of the previous period;

WACC (Weighted Average Cost of Capital) – weighted average cost of capital.

Thus, EVA shows the income received by a corporate enterprise above investors' expectations. If the indicator remains positive for a long period, the company increases its value;

if it is negative, the company loses value [4].

EVA is a relatively universal indicator that can be used for financial analysis, management, and valuation of a corporate enterprise. In essence, it represents a profitability indicator that does not possess the shortcomings typical of traditional performance measures. Classical indicators used to measure company profitability are various profitability ratios (ROE, ROI, etc.), calculated on the basis of financial and operational data obtained from the accounting reports of a corporate enterprise. However, it should not be overlooked that these indicators are characterized by specific limitations. The use of accounting methods can sometimes lead to distortions in profit, either through artificial overstatement or understatement; moreover, they are unable to account for the time value of money and, above all, investor risk; moreover, the profitability indicators of a particular company often show an insufficient correlation with the value of its shares in capital markets, which may mislead decision-makers regarding the company's development.

Therefore, the emergence of the EVA indicator was driven by the need to identify an economic measure that would:

– reflect a strong relationship with share value, established using statistical methods;

– promote the comprehensive use of information from accounting registers (financial accounting records) of a corporate enterprise for calculating the required indicators;

– provide an assessment of the company's value while taking risk factors into account.

However, certain difficulties also arise in the calculation of EVA. In particular, the challenges associated with determining the economic value added indicator lie not only in the correct estimation of WACC but also in the complexity of calculating NOPAT and IC. For the purpose of determining EVA, the NOPAT indicator is calculated as follows:

Operating profit = (+) accrued interest – income tax

Most often, when determining EVA in a corporate enterprise, particular attention is paid to the cost of invested capital, for which the business will inevitably pay. In the vast majority of academic literature, the calculation of capital is schematically presented as follows:

Total assets of the enterprise = (–) provisions for future expenses and payments

(–) accounts payable for goods, works, and services

(–) current liabilities related to settlements

(–) other liabilities on which no interest is accrued for their use.

In most cases, the arithmetic average value of capital for the period for which EVA is calculated is used [5].

The EVA calculation formula presented above (1) allows for identifying possible ways to increase the value of this indicator:

– increasing the income generated by invested capital. This result may be achieved through various measures, such as cost management, improving the efficiency of business

processes through reengineering, and other managerial actions;

– expansion through investment, that is, investing funds in projects whose profitability exceeds the cost of the capital attracted for their implementation;

– improving the efficiency of asset management, including the sale of non-core or unprofitable assets, reduction of the turnover period of accounts receivable and inventories, and other similar measures [6].

The EVA has a number of advantages and disadvantages.

Table 1.

Advantages and Disadvantages of EVA

Disadvantages	Advantages
1.Repeated changes to financial reporting results negatively affect the reliability of the calculation.	1. Economic Value Added is an indicator that allows the assessment of the efficiency not only of a company as a whole, but also of a specific project
2. The reliability of the calculated indicator is determined by the reliability of the calculations of its components.	2. A management incentive system built on Economic Value Added (EVA) creates incentives for managers to focus specifically on the creation of shareholder value.
3. There are no universal rules for making adjustments, therefore calculations may differ, which makes it difficult to compare this indicator across different companies.	3. Can be applied by companies of various types and sizes.

Summarizing the above, it should be noted that despite the numerous advantages of the studied indicator, an important drawback lies in the fact that the calculation of EVA requires numerous adjustments to accounting statements. The creators of EVA, G. Stern and B. Stewart, eliminate distortions present in traditional accounting reporting by introducing more than 150 adjustments, including adjustments related to the value of capitalized intangible assets net of accumulated depreciation, deferred taxes, and various reserves [7].

However, B. Stewart also proposed a new indicator that allows assessing the effectiveness of business entities — EVA Momentum. EVA Momentum represents the change in a firm's economic profit over a certain period divided by its sales in the previous period:

$$EVA_{MOM}=\frac{\Delta EVA_t}{Sales_{t-1}} \quad (2)$$

EVA Momentum introduces EVA as a ratio-based framework for the first time, making it more understandable, more informative, and significantly more effective as a management tool and performance evaluation indicator than before.

The EVA Momentum indicator consists of two main components. The first component is EVA Margin. It is determined by dividing EVA by the corresponding revenue. As a result, an increase in this indicator directly depends on the creation of higher added value and cost reduction.

The second component is profitable growth, which is calculated as the growth of revenue over a certain period weighted by the level of EVA Margin. The sum of these two indicators constitutes the value of the EVA Momentum indicator.

$$EVA_{mom} = \Delta\left(\frac{EVA}{SALES}\right) + \frac{EVA_t}{SALES_t} * \frac{\Delta SALES}{SALES_{t-1}} \quad (3)$$

The distribution of EVA Momentum helps managers identify weak points in the operations of a corporate enterprise. It should be noted that an important component of the company value management process using the EVA method should include both the calculation of the company's value and EVA, as well as consideration of the dynamics of changes in this value.

Within a company, Market Value Added (MVA) arises from the effective design and sustained implementation of efficient value creation processes by management, from which profits are generated. These profits are the sustainably achievable surplus earnings that the company reaches as residuals after covering the cost of equity and debt. Residual profits, which are determined from the annual financial statements, are called Economic Value Added (EVA). The MVA can thus be calculated from the sum of the discounted (planned) EVAs (EVA ist eine registrierte Trademark von Stern&Stewart). The following formula applies [8]:

$$MVA = \sum_{t=1}^{n} \frac{EVA_t}{(1+WACC)^t} \quad (4)$$

There is another approach to calculating MVA, in which Total Capital is subtracted from the sum of the market value of equity and debt.

$$MVA = MVD + MVE - Total\ Capital \quad (5)$$

where:
MVD (Market Value of Debt) – market value of liabilities;
MVE (Market Value of Equity) – market value of equity;
Total Capital – total invested capital.

However, it should be noted that the use of MVA is complicated by a number of factors:

1. according to modern accounting standards, a company's intangible assets (trademarks, licenses, brand value, corporate reputation, human capital, etc.) remain unaccounted for or are recorded at a value that does not correspond to market conditions. At the same time, the development of an enterprise largely depends on the quality of its intangible assets;
2. assets are recorded in the balance sheet at their acquisition cost. However, if an asset was acquired several years ago, its initial value may significantly differ from its current market value;
3. management frequently possesses considerable potential to adjust accounting data with the aim of inflating the calculated MVA indicator [9].

On the basis of EVA, modern methods for assessing the value of corporate enterprises, corporate rights, and individual property assets have also been developed. Valuation based on EVA relies on the discounting principle, which underlies the previously described DCF method, but instead of the Free Cash Flow (FCF) indicator, EVA is used. In addition, the calculations involve the initial and intermediate values of invested capital.

$$ВП_{EVA} = IK_0 + \sum_{t=1}^{n} \frac{EVA_t}{(1+WACC)^t} + \frac{ЗВП}{(1+d)^t} + НА - ПК \quad (6)$$

$$ЗВП_{NPV} = \frac{NOPAT_{t+1} - (WACC_s \times IC_t)}{WACC_s \times (1+WACC_s)^t} \quad (7)$$

Ignoring cash flows is a drawback inherent in the EVA indicator, which is eliminated when calculating the Cash Flow Return on Investment (CFROI) indicator. Thus, another advantage of this indicator compared with other measures is that the cash flows generated by existing and future assets, as well as the initial investments, are expressed in current prices, meaning that the inflation factor is taken into account [10].

However, on the other hand, this indicator also has several disadvantages that complicate its application. These include the co'mplexity of calculations due to the need to identify all cash flows generated by both existing and future assets. In addition, the result of the calculation is a relative indicator rather than the amount of value created or destroyed [11].

To assess the value created by an enterprise, CFROI is compared with WACC. This comparison also helps assess the effectiveness of the enterprise's investment activities. To improve this indicator, the enterprise should widen the gap between the two indicators.

The CFROI indicator is calculated in four stages according to A. Damodaran [12]. The first indicator to be calculated is Gross Investment. The second indicator is Gross Cash Flow. An integral part of the analysis is determining the useful life of assets. As in most cases, the asset's residual value is assumed to be its salvage value at the end of its useful life. The final indicator is economic depreciation.

It should also be noted that the Cash Value Added (CVA) indicator was developed on the basis of CFROI. This metric is calculated as the difference between CFROI and WACC, multiplied by the amount of Gross Investment, and allows assessing whether the enterprise generates a sufficient amount of operating cash flow to meet its needs [5; 3; 13].

The Cash Value Added (CVA) method is often referred to as Residual Cash Flow (RCF). Recently, an increasing number of specialists have preferred this particular criterion of value creation because:

– the return on invested capital is represented by a flow-based indicator — cash flows;

– unlike the CFROI indicator, the cost of attracting and servicing capital from various sources is explicitly taken into account, that is, the weighted average cost of capital (WACC) [6].

One of the evaluation methods used within the framework of value-based assessment of development is the Shareholder Value Added (SVA) method. Shareholder Value Added reflects the increase in shareholders' equity generated by a transaction, calculated as the difference between its value after the transaction and its value before the transaction.

One of the evaluation methods used within the framework of value-based assessment of development is the Shareholder Value Added (SVA) method. Shareholder value added is defined as the increase between two indicators — the value of shareholders' equity after a certain operation and the value of the same equity before the implementation of this operation.

Table 2.

Calculation of indicators CFROI та CVA

Component	Calculation
Economic depreciation	$\text{Gross investments x } \frac{\text{WACC}}{(1+\text{WACC})^n - 1}$
Gross investments	Current assets – Liabilities on which no interest is accrued + Book value of non-current assets (excluding goodwill) + Accumulated depreciation of fixed assets
Gross cash flow	Profit (loss) from ordinary activities before taxation + Depreciation of non-current assets + Increase (decrease) in provisions + Loss (profit) from unrealized exchange rate differences + Profit (loss) from non-operating activities + Interest expenses – Income tax
Useful life of assets (n)	Determined as the ratio of the initial value of depreciable assets to the annual depreciation amount
Cash flow Return on Investment(CFROI)	$\frac{\text{Gross cash flow} - \text{economic depreciation}}{\text{gross investments}}$
Cash value added (CVA)	Gross cash flow-economic depreciation-cost of capital= (CFROI-WACC)x Gross investments

Source: composed by author based on [3; 5; 13]

Later, another definition of the SVA indicator appeared: shareholder value added represents the difference between the estimated value of shareholders' equity (for example, calculated using the discounted cash flow (DCF) method) and its book value [10]. The use of this indicator in managing development makes it possible both to determine the effectiveness of managerial decisions made in the past and to assess the value created through investments in the same year in which these investments were made. In this case, the emphasis is placed on determining the period during which the company's advantages are strengthened. Such an approach is understandable both to internal users and to external analysts.

In our opinion, the main drawback of this model lies in the complexity of calculations, as well as the difficulties associated with forecasting the cash flows of a corporate enterprise.

Conclusions. The conducted study made it possible to generalize theoretical and methodological approaches to evaluting the performance of corporate enterprises based on the use of various financial and value-based indicators. The analysis has shown that the considered models rely on different methodological principles and sets of indicators, each of which reflects specific aspects of corporate performance and managerial efficiency. At the same time, the research confirms that none of the existing indicators can be regarded as a universal tool for evaluating the effectiveness of a corporate enterprise. Despite their analytical advantages, each indicator has certain limitations related to the scope of application, the level of sensitivity to external economic conditions, and the ability to adequately reflect the process of value creation.

In this regard, the selection of an appropriate model for evaluating

corporate performance should be based on a comprehensive consideration of both internal and external factors. This requires taking into account the industry-specific nature of its activities, the level of capital intensity, the scale and organizational structure of business processes, as well as the overall macroeconomic environment and prevailing market conditions. Furthermore, particular attention should be paid to such criteria as the transparency and interpretability of the indicator, the level of its analytical informativeness, the practicality of its implementation in corporate management, and its potential impact on managerial decision-making processes.

The findings of the study substantiate the expediency of applying a comprehensive approach to performance evaluation through the combined use of several complementary indicators. Such an approach allows for a more objective and balanced assessment of corporate performance by integrating the advantages of different evaluation methods while minimizing their individual shortcomings. In addition, the simultaneous application of multiple indicators enables comparative analysis of results obtained through different methodologies and, where appropriate, the calculation of aggregated or averaged measures.

Consequently, the implementation of a multidimensional system of performance indicators enhances the reliability and analytical depth of corporate performance assessment and increases its practical relevance for managerial decision-making. The adoption of such an approach contributes to improving the effectiveness of corporate governance, optimizing the allocation of financial and investment resources, and ensuring sustainable long-term value creation for shareholders.

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