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# MODELS AND METHODS OF FINANCIAL STATEMENT ANALYSIS FOR ASSESSING THE EFFECTIVENESS OF THE CORPORATE GOVERNANCE SYSTEM

**Annotation:** *The article is devoted to the analysis of models and methods used to evaluate financial statements in order to determine the effectiveness of the corporate governance system. In the context of globalization and growing competition, the importance of transparency and reliability of financial information increases, which makes it relevant to study the tools that allow evaluating corporate governance through the prism of financial indicators. Particular attention is paid to the integration of financial and non-financial indicators, which allows for a more complete assessment of the impact of corporate governance on financial results.*

**Key words**: *globalization, corporate governance, financial reporting, Taffler and Altman models, horizontal analysis, inflation, financial ratios.*

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# МОДЕЛИ И МЕТОДЫ АНАЛИЗА ФИНАНСОВОЙ ОТЧЕТНОСТИ ДЛЯ ОЦЕНКИ ЭФФЕКТИВНОСТИ СИСТЕМЫ КОРПОРАТИВНОГО УПРАВЛЕНИЯ

**Аннотация:** *Статья посвящена анализу моделей и методов, применяемых для оценки финансовой отчетности с целью определения эффективности системы корпоративного управления. В условиях глобализации и растущей конкуренции важность прозрачности и надежности финансовой информации возрастает, что делает актуальным исследование инструментов, позволяющих оценивать корпоративное управление через призму финансовых показателей. Особое внимание уделяется интеграции финансовых и нефинансовых показателей, что позволяет более полно оценить влияние корпоративного управления на финансовые результаты.*

**Ключевые слова**: *глобализация, корпоративное управление, финансовая отчетность, модели Таффлера и Альтмана, горизонтальный анализ, инфляция, финансовые коэффициенты.*

## MODELS AND METHODS OF FINANCIAL STATEMENT ANALYSIS FOR ASSESSING THE EFFECTIVENESS OF THE CORPORATE GOVERNANCE SYSTEM

**Introduction.** The improvement of corporate governance is determined by the level and maturity of the market economy. International experience demonstrates that having an effective corporate governance system within companies serves as the foundation for improving financial performance and the quality of managerial decisions. Now is the right time to focus efforts on developing the narrative part of financial reporting to provide the most comprehensive picture of how business value is created and what measures are being taken to protect it. Reports should be built around the company's unique business model, reflecting the specific factors that directly influence the long-term value of the business. In practice, this means:

- greater focus on operational factors affecting performance;
- greater attention to the resources critical to the company's success;
- providing users with information that allows them to form their own opinion about the company’s future performance.

**Main part.** Financial analysis utilizes a set of financial data that can best highlight the various aspects of a corporation's operations. Their application implies the importance of calculating specific resulting integral indicators that contribute to summarizing the company's financial well-being.

**Research Methods**. The financial condition of a corporation can be analyzed using various methods. However, the most popular ones include:

- **Taffler Model** (analysis of corporate financial stability);
- **Altman Model** (bankruptcy probability assessment).

The basic formula of the Taffler model is as follows:

$$Z = 0.53X_1 + 0.13X_2 + 0.18X_3 + 0.16X_4$$

Where:

- $X_1$ = Pre-tax profit / Current liabilities
- $X_2$ = Current assets / Total liabilities
- $X_3$ = Current liabilities / Total assets
- $X_4$ = Revenue / Total assets

The resulting **Z-score** is used to assess a corporation's financial stability and predict potential financial difficulties. According to this model:

- If the **Z-score** is greater than **0.3**, the company has a low risk of bankruptcy within the next year.
- If the **Z-score** is less than **0.2**, the company has a high risk of bankruptcy.

The weights of the financial indicators in the Taffler model, based on their influence on the resulting **Z-score**, are distributed as follows:

- **Pre-tax profit / Current liabilities ($X_1$)**: **53%**
- **Current assets / Total liabilities ($X_2$)**: **13%**
- **Current liabilities / Total assets ($X_3$)**: **18%**
- **Revenue / Total assets ($X_4$)**: **16%**

This distribution reflects the varying degrees of significance each factor contributes to the overall financial stability assessment. Based on conducted tests, this model identifies a bankrupt company with the following probabilities:

- **97%** one year before bankruptcy,
- **70%** two years before bankruptcy,
- **61%** three years before bankruptcy,
- **35%** four years before bankruptcy.

These results demonstrate the model's reliability in short-term forecasting, with its predictive accuracy decreasing over longer time horizons.

The **Altman Model** predicts the probability of a company's bankruptcy and was developed based on a sample of 66 companies—33 successful and 33 bankrupt. The model achieves an accuracy of **95%**.

The simplest version is the **Two-Factor Altman Model**, which uses two key indicators:

- **CR (Current Ratio)** – a measure of current liquidity
- **W (Weight of Debt in Total Assets)** – the proportion of borrowed funds in the company's assets

These indicators are multiplied by specific constants—empirically determined weight coefficients (**a**, **b**, **y**). The formula for the two-factor model is:

$$Z_2 = a + b * (CR) + y * (W)$$

**Five-Factor Altman Model ($Z_5$)**

Since the two-factor model does not provide a comprehensive assessment of a company's financial position, analysts more frequently use the **Five-Factor**

**Altman Model ($Z_5$)**. This model is a linear discriminant function with coefficients calculated based on research involving a larger sample of companies.

The formula for the five-factor model is:

$$Z_5 = 1.2 * x_1 + 1.4 * x_2 + 3.3 * x_3 + 0.6 * x_4 + 0.999 * x_5$$

Where:

- $x_1$ = Working capital / Total assets
- $x_2$ = Retained earnings / Total assets
- $x_3$ = Earnings before tax / Total assets
- $x_4$ = Market value of equity / Book value of total liabilities
- $x_5$ = Revenue / Total assets

**Interpretation of Z-Score Results:**

- **$Z < 1.81$** – Probability of bankruptcy is **80-100%**
- **$1.81 \leq Z < 2.77$** – Moderate probability of bankruptcy, **35-50%**
- **$2.77 \leq Z < 2.99$** – Low probability of bankruptcy, **15-20%**
- **$Z \geq 2.99$** – The company is stable, with minimal risk of insolvency over the next two years.

It is also worth considering the **modified five-factor Altman model** for companies whose shares are not publicly traded or have limited trading on the stock market (a situation typically characteristic of Uzbek enterprises).

The formula for the modified five-factor Altman model is:

$$Z_m = 0.717 * x_1 + 0.847 * x_2 + 3.107 * x_3 + 0.42 * x_4 + 0.995 * x_5$$

Where:

- $x_1$ = Working capital / Total assets

- $x_2$ = Retained earnings / Total assets
- $x_3$ = Earnings before tax / Total assets
- $x_4$ = Book value of equity / Debt (liabilities)
- $x_5$ = Revenue / Total assets

**Interpretation of $Z_m$-Score Results:**

- $Z_m < 1.23$ – The company is considered bankrupt.
- $1.23 \leq Z_m < 2.89$ – The situation is uncertain.
- $Z_m \geq 2.9$ – Indicates stable and financially sound companies.

The **Altman Model** utilizes several key indicators based on financial statement data to assess a company's financial condition. These indicators include:

1. **Liquidity Indicators** – Such as the current liquidity ratio, which reflects a company's ability to meet its current obligations. This indicator is crucial for evaluating the financial stability of the enterprise.
2. **Profitability Indicators** – Assess the profitability of assets and equity, allowing for an evaluation of resource efficiency and profit generation.
3. **Self-Financing Ratio** – Reflects the proportion of equity in the total capital of the company, which is important for determining the degree of financial independence.
4. **Asset Turnover Ratios** – Such as inventory turnover or accounts receivable turnover, which help assess the efficiency of inventory and receivables management.

**Interpretation of the Z-Score in the Altman Model:**

The **Z-Score** is a key indicator that helps determine the likelihood of a company's bankruptcy.

- **Higher Z-Score values** indicate financial stability and a low risk of insolvency.
- **Lower Z-Score values** (below a critical threshold) signal a high risk of bankruptcy.

In cases where the Z-Score is below the critical threshold, it serves as a warning, indicating the need to take measures to improve the company's financial condition and reduce the probability of bankruptcy.

**Research Findings.** Let's consider in more detail the methods of financial analysis described above, using the example of the open data of **AO "O'zikkilamchiranglimetall XII AJ"** for the period from 2014 to 2023. Reviewing financial statements over such a long period (10 years) often allows for observing trends in changes in corporate governance policy.

**Horizontal Analysis.** This method of financial analysis compares the financial indicators of a company over several periods to identify the dynamics of changes. The main goal of horizontal analysis is to determine trends and assess how key financial indicators evolve over time, allowing conclusions to be made about the growth, stability, or decline in the company's effectiveness.

**Horizontal Analysis Algorithm:**

- **Step 1:** Define several consecutive periods (such as quarters or years) whose data will be compared. The more periods, the more accurate and complete the picture of changes will be.
- **Step 2:** Define the base period: one of the periods is selected as the base. The other periods are compared with this base period, typically in absolute and relative values.
- **Step 3:** Calculate changes in absolute values: for each indicator, compare the absolute values for different periods using the formula:

Δ = (Indicator for the current period - Indicator for the base period) / (Indicator for the base period) (2.1)
This shows how much the indicator has increased or decreased in absolute terms.

- **Step 4:** Calculate changes in percentages: to understand relative changes, percentage calculation is used:
Δ% = (Indicator for the current period - Indicator for the base period) / (Indicator for the base period) * 100 (2.2)
This gives an understanding of the percentage by which the indicator has increased or decreased.
- **Step 5:** Interpretation of results – at this step, the results of the horizontal analysis are interpreted, and an understanding of the dynamics of the company's key financial indicators is formed.

**Advantages of Horizontal Analysis:**

- **Trends and dynamics** – It easily determines how indicators change over time, helping to identify positive or negative trends.
- **Comparison of several periods** – It allows for the identification of stable trends based on data from several years (periods).
- **Assessment of progress** – It helps evaluate the effectiveness of actions, such as adjustments to strategy or management, and their impact on financial results.

**Disadvantages of Horizontal Analysis:**

- **Dependence on the base period** – If the base period was abnormal (e.g., due to external factors), it may distort the results of the analysis.
- **Does not account for inflation** – Horizontal analysis works with nominal (absolute) data, and if there was high inflation during the analyzed period, it could lead to incorrect conclusions.

It should be noted that horizontal analysis is an important tool for managers and analysts, allowing them to make more informed decisions based on trends in financial data.

**Horizontal Analysis Results.** Let's consider the results of horizontal analysis using a sample of specific indicators from Form 2 (Financial Results) of **AO "O'zikkilamchiranglimetall XII AJ"** for the period from 2014 to 2023. The results of horizontal analysis show growth in revenue from sales between 2017-2018, followed by a sharp increase in sales revenue from 2019 to 2021, and a gradual decline back to the 2018 level from 2021 to 2023. Based on the results of the horizontal analysis of the financial statements, we hypothesize that serious changes in the corporate governance system were made starting in 2017, which led to the sharp increase in revenue from sales in the following years.

**Conclusion.** Financial statements provide detailed data for evaluating the effectiveness of corporate governance and help identify strengths and weaknesses, allowing for timely strategy adjustments. A thorough analysis of this data provides an objective view of how effectively management is being implemented and helps make more informed decisions to achieve the company's long-term goals. When building models to assess the corporate governance system, calculating financial ratios based on financial statement data plays a significant role, as it provides preliminary characteristics of the company's current condition.

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