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## The Balance sheet as information model

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### Abstract

The article examines the opportunity of using the balance sheet determinants as information model for the economic-mathematical modeling of financial position of an organization. It is proved that one of the main determinants presented in a balance sheet and indicating the efficiency of a company is the determinant of retained earnings and the factors affecting the amount of retained earnings are studied. The article suggests an economic-mathematical model of multiple regression and states the balance sheet profit maximization pattern.

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### 1. Introduction

The centuries-long history of accounting development offers a great amount of different balance models [1-4,6,7,15-17,19]. The traditional balance sheet model can be introduced in a formula

$$A = P \tag{1}$$

where A stands for assets and P for liabilities side of the balance-sheet.

This model makes a distinction of transactions from the perspective of their impact on the currency of balance. The accounting equation can be introduced in a different way:

$$A = C + O \tag{2}$$

where C stands for equity and O for liabilities.

This kind of accounting equation shows that assets are formed by means of an organization's equity and liabilities planned for payment. If we divide equity into owners' contributed capital and accumulated capital, the accounting equation becomes:

$$A - O = CC + AC, \quad (3)$$

where CC is contributed capital and AC is accumulated capital.

This equation claims that assets value addition or liabilities decrease within a period lead to net profit increase within this period as contributed capital and retained earnings remain constant.

On this basis it is possible to assume that one of the main determinants presented in a balance sheet and proving the efficiency of the company is the retained earnings determinant. In this regard it is interesting to define the impact of these factors on retained earnings determinant basing on balance sheet data.

## 2. Method

The possibility of using a balance sheet as information model reflecting an organisation's financial position is mainly determined by the applying of double entry accounting of economic life factors. Double entry not only predetermines the equality of assets and liabilities totals in a balance sheet, but also causes correlation between its items [11-13]. It is defined by the fact that representing of each transaction is performed simultaneously on two accounts. Consequently, at the moment of registration on this record there is a functional relationship between the accounts.

Therefore, it is possible to make conclusions from the assumption that balance sheet data can be used for the economic-mathematical modeling of financial position of an organization.

The research of relations and correlations between objectively existing processes and phenomena plays an important role in economics [8-10]. The complex arrangement of economic determinant correlations is being successfully studied by means of mathematical methods and particularly by performing a correlation-regression analysis of the balance sheet.

Correlation-regression analysis lets the relation of economic determinants changes caused by a number of cumulatively affecting factors be precisely defined in mathematical form. This again allows influencing the defined factors, interfering with the corresponding economic process aiming to achieve certain results.

Scientists distinguish the following objectives of correlation-regression analysis of a balance sheet:

- determination of the prime factors affecting the result characteristics and the estimation of their affect rate;
- forecasting of the regressand value if the value of factors are fixed

The most interesting for us is studying of different variables' impact on "Retained earnings" determinant. Basing on this data set it is possible to construct a regression equation.

## 3. Result

It is necessary to analyze the impact of factors on the balance profit of an organisation. Factor analysis of profit is of a great scientific interest and has a practical importance in terms of profit markup reserves detecting and elaborating of measures to maximum use of the detected reserves.

To construct a retained earnings analysis model it is necessary to classify the factors, data of which can be obtained from a balance sheet. Here it is important to choose the factors for correlation-regression analysis correctly as this kind of analysis is performed basing on a balance sheet where all the factors are strongly connected [5,14,18].

For the purpose of solution of the assigned task we obtained several factors, quantitative impact of which will be estimated by constructing an economic-mathematical model of multiple regression. Analysis was performed with the help of STATGRAPHICS Plus program.

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