ECONOMIC-MATHEMATICAL MODELLING OF ENTERPRISES' FINANCIAL SOUNDNESS WITH PRINCIPAL COMPONENT ANALYSIS

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The article analyses the financial soundness of five trade enterprises of Lviv ("Lviv-Audyt" clients) by multivariate analysis methods, namely, principal component analysis. As the financial soundness indicators there are used five most popular indicators: the financial autonomy ratio, the ratio of financial stability, the ratio of reserves to ensure equity and manoeuvrability equity ratio. These indicators are calculated on the basis of financial statements of the investigated enterprises. Principal component analysis creates a new set of orthogonal variables that contain the same information as the original set. The goal of principal component analysis is to explain the maximum amount of variance with the fewest number of principal components. The method of principal component analysis revealed that the financial autonomy ratio explains 80.25% of the total variation. The principal component analysis is used to reduce the number of variables and avoid multicollinearity. Using the first principal component as an indicator of financial stability, financial stability of the value obtained for all the studied firms, besides one. Financial soundness of the investigated firms varied from 1.1056 to -4.0024, where 0 corresponds to the average in the direction of activity, and a change in the upward or downward, respectively, indicates an improvement or worsening of financial soundness. The integrated and normalized rate of financial stability of enterprises allows us to compare indicator values for different enterprises. The most stable proved the first enterprise for which the figure is 1.1056, the least stable is the fourth enterprise for which the figure is -4.002.