CLUSTER ANALYSIS OF FOOD INDUSTRY ENTERPRISES IN TERMS OF THEIR FINANCIAL STABILITY

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Abstract. *An important scientific and practical task is solved in the article, which is to substantiate the theoretical aspects and develop practical recommendations as for improvement of the process of managing financial stability as a component of ensuring the sustainable functioning of food industry enterprises. The mechanism of management of financial stability of the enterprise is considered, for revealing critical estimation of financial results both in statistics for a certain period, and in dynamics. The article provides a comprehensive analysis of the functioning of food industry enterprises with the determination of the level of management efficiency of their financial stability.*
Keywords: *financial stability, management efficiency, cluster analysis, financial resources, calculation algorithms, financial coefficients.*

The financial stability of the food industry implies the ability of the enterprise to maintain a given mode of functioning for the most important financial and economic indicators.

Timely analysis of financial stability according to domestic and foreign models and methods, using economic models creates new opportunities for the enterprise to identify reserves to increase its competitive position, market share and implementation of other tactical and strategic goals. Especially today, when it is essential for enterprises to maintain their

positions, financial stability and its constant monitoring is the main issue facing the management of the enterprise.

The purpose of the article is to cluster enterprises in order to determine the level of their financial stability on the example of food industry enterprises.

The main indicators for the analysis are: autonomy rate; financial risk ratio; equity maneuverability ratio; financial leverage ratio.

Cluster analysis is a set of methods allowing to classify multidimensional observations, each of which is described by a set of initial variables. The definition of the cluster analysis comes from the English word "cluster" which means a cluster, a congestion, group. The subject of cluster analysis was first identified in 1939 by researcher Trion. Unlike combinational groups, the cluster analysis leads to the division into groups taking into account all grouping signs at the same time [1]. The cluster analysis is a set of various methods and algorithms of classification (method about a unification of clusters).

In order to carry out a clustering it was created selection from 10 enterprises of the food industry of Ukraine (production of drinks)

For determination of optimum quantity of clusters among the studied enterprises one of hierarchical methods - Ward (Ward's) method is used. In this method intragroup sum of squares of deviations is used, as an objective function, which is nothing more than the sum of squares of distances between each point (object) and the average of the cluster containing this object.

It is offered to conduct cluster analysis with using of software product "Statistika".

The k-averages method has been widely used for clustering problems with a large amount of input information. This method of a clustering significantly differs from such agglomerative methods as tree-like clustering. Let's say there are hypotheses concerning quantity of clusters. It this case, it is possible to specify an algorithm to form exactly three clusters so that they are as different as possible. This is exactly the type of tasks that solves k-averages algorithm. In the general case the method k-averages builds exactly k different clusters, located on the furthest distances from each other.

After conducting a cluster analysis of food industry enterprises, 2 clusters were identified in accordance with the financial stability of enterprises. The first class includes financially stable enterprises, the second cluster, on the contrary, includes financially unstable enterprises.

Use of the cluster analysis allows to classify the enterprises according to their financial stability in order to improve the management of financial activities of the enterprise, as well as resilience to external and internal challenges.

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