

MODELS AND SOFTWARE SOLUTIONS OF FINANCIAL CONDITION ASSESSMENT OF THE IT COMPANY

Goloskokov A.E., Yakovenko A.A.

National Technical University «Kharkiv polytechnic institute», Kharkiv

Management of complex objects is one of the actual problems. It is characterized by a large amount of information, fuzziness, which leads to the need to use the mathematical apparatus of fuzzy situational control. The main function of the control system is to develop in accordance with a set of rules and issue control actions to actuators in the required form. A necessary condition for the correctness of the developed effects is a reliable assessment of the state in which the control object is located.

An IT company is considered as an example of a complex system. The state of the control object is estimated by the values of the attributes. When describing the values of attributes, it is possible to obtain an unreasonably large number of situations. This necessitates the aggregation of information. Thus, the identification problem can be represented in the form of two tasks, namely, the aggregation of the initial information and the assessment of the state of an IT company.

The process of aggregation of information is carried out using the method of fuzzy cluster analysis (k-means) and approximation of the results. The state of the company is estimated using the method of fuzzy logic. The set of reference situations quite fully describes the possible states of the object, provided that the management features are taken into account. However, it is impossible to take into account all the features of management. This leads to the need of using the concept of a fuzzy situation.

The paper considers an example in which the state of the company is described by the vector of attributes $X = \{x_1, x_2\}$. Obtained as a result of aggregation data allows to form a set of reference situations. $S = \{S_1, \dots, S_n\}$ and describe the current situation S_0 . Next, the degree of inclusion of the situation S_0 to the each of the reference situations is determining. The reference situation that corresponds to the situation S_0 will characterize the current state of the company.

Thus two problems were solved: aggregation and identification. This made it possible to assess the current state of the company. The obtained results are used to determine the effective control of a complex system. Theoretical and practical results of work allow to increase the efficiency of the complex system management process.

References:

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