

Modular Structure of Investment Decision Support System

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Abstract – This paper reviews mathematical support for implementation of decision-making support system modules in investment company.

Keywords – Modeling, investment, projects portfolio, investment policy.

I. INTRODUCTION

This paper reviews one of directions of investment company operation, namely investments in the projects of businesses of national economy. For decision-making justification, construction of investment management models is required.

II. MATHEMATICAL SUPPORT OF DSS

As investment company operates with large volume of dynamical information from diverse sources which in its turn, probably is not structured time wise, and uses set of models for decision-making, the problem of processing and storage of the information for the purpose of operative use is obvious. Hence, there is a necessity of creation Decision Support System (DSS) [1]. The modular structure of developed DSS is shown on Fig. 1.

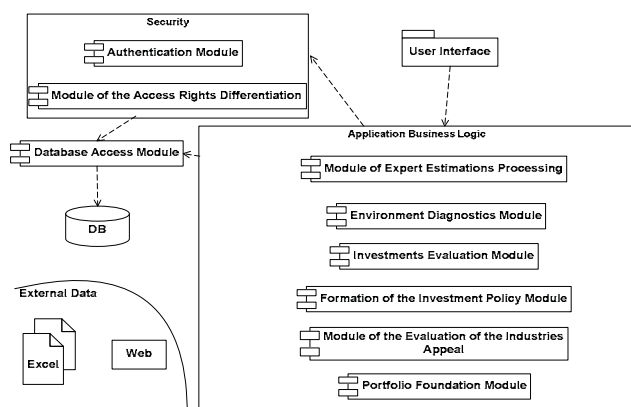


Fig.1. Structure of DSS

Each module includes models and algorithms of solving individual problems, using various mathematical instruments.

Thus, the problem of environmental diagnostics requires analysis and determination of investment market conditions. For this, the factors, characterizing investment market conditions should be determined. It is suggested to use expert-score technique, where a certain score is assigned to each factor depending on the value. Then the weights of given factors and aggregated index, which describes certain type of investment market conditions, are defined.

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The problem of formation of investment policy includes identification of the set of policies for specific investment market conditions and development an algorithm of selection of the most acceptable investment policy on the basis of Neural Network. Models of investment policies, where profitability and risk are functional dependencies of factors that influence profit and risk of a project are developed. As investment projects relate to a certain field, the project choice is influenced by appeal of a field. It is suggested to use expert methods for solving the problem of assessment of investment appeal of fields.

Following assessment of investment market conditions and formation of investment policy for specific situation, it is necessary to solve a problem of valuation of investment projects effectiveness. With this, the estimation can be carried out depending on the type of initial information. For example, offered are models of estimation of investments efficiency on the basis of expert evaluation, taking into account subjectivity and accuracy of information [2].

Also the paper offers models of investment project effectiveness assessment based on fuzzy sets [3].

It is recommended to form project portfolio using both classic optimization method and application of genetic algorithms. It is recommended to form both static and dynamic investment projects portfolios. The static portfolio is intended for one-time investment and dynamic portfolio is formed within in framework of investment management, both the client’s, and the investment company investments.

III. CONCLUSION

The system considered will allow analytical and information support of decision-making process as to developing of investment policy and formation of investment projects portfolio depending on investment market conditions.

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