

DEVELOPMENT OF A RATIONAL MANAGEMENT ALGORITHM FOR DATA PROCESSING AND DECISION-MAKING SUPPORT IN THE CORPORATE INFORMATION SYSTEM OF TAX AUTHORITIES

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Abstract. An algorithm for the intellectual support of decisions in integrated management systems has been developed, its main components have been described, its structure has been formed, and algorithms have been developed to work in several modes that increase management efficiency on the example of tax authorities. An alternative solution structure has been designed and developed for management decision making. Perspectives of forecasting issues to achieve efficiency in the management mechanism were analyzed. The process of intellectual support for decision-making is described algorithmically.

Key words: intelligent decision support system, rational management, expert system, module, algorithm, structure, model, tax authorities. The activity of modern integrated management system is determined by many interrelated parameters. Therefore, a situation is quite likely in which the tax's management, using traditional methods of analysis and management, may not take into account the negative aspect in the work of its structure. This is most likely when the integrated management system prefers simple, convenient, but not always effective working methods in its current activities.

Formulation of the problem. Using the principles of organization and methodology for constructing a DSS, develop a decision support system to solve the problem of intelligent management of banking activities. To achieve this goal, it is necessary to solve the following tasks:

- determine the main components of the system being developed;
- to form the structure of the intelligent decision support system (IDSS);
- to develop algorithms for decision support;
- to evaluate the results and prospects for further research.

Description of the main components of the system

To develop the IDSS structure, it is necessary to identify and describe its main components.

1. **Database** - designed to save, manage, display and analyze data. The system uses two types of sources:

- external - official data of the National Bank of Uzbekistan, the Tax Committee, the Organization for Economic Cooperation and Development;
- internal sources - data that are entered manually by the user, namely, the performance indicators of a particular integrated management system (For example tax authorities).

2. **Knowledge base** - the base, which stores the knowledge of the intellectual system [1].

The knowledge base consists of two parts:

- conceptual model - a generalized description of the subject area, its composition and structure;

- a model of production rules, which presents knowledge about the quality indicators of banking.

3. **Model base** - a system that includes a set of models to meet user requests and solve the necessary problem. The base includes the following models:

- a model for the development of the banking system at the macro level;
- a model of a commercial bank's activities at the micro level;
- fuzzy model of quality indicators management.

4. **User interface** - designed for dialogue with decision makers both at the stage of entering information and outputting results, developed using graphical display tools. The IDSS interface for tax management serves as a means of displaying the results of the application of models in the form of graphs of predicted indicators, functional dependencies, as well as calculations of financial indicators and their assessment as a criterion for achieving the set goal.

After highlighting and describing the main components of an intelligent system, it is necessary to develop a structural diagram, which is a means of visual display of the relationship between them (Fig. 1).

The intelligent system is hybrid [2], since the following methods and approaches are used for the practical implementation of tasks:

- methodology of conceptual modeling to identify the main elements of the management model and cause-and-effect relationships between them; Forecasting analyzes the prospects of issues to achieve efficiency in the management mechanism. It is also useful to describe the process of intellectual support for decision-making in an algorithmic way.

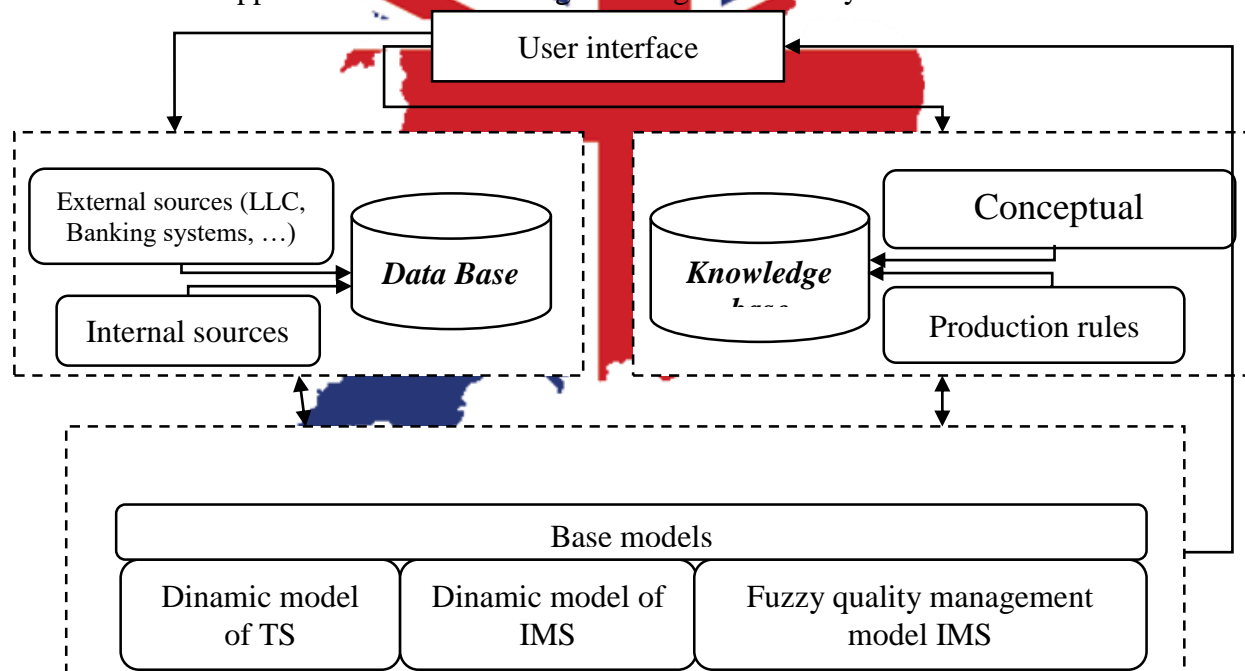


Figure 1 - Structural diagram of the bank's IDSS

- methods of statistical and regression analysis to identify non-linear functional patterns of taxing development;
- methods and principles of system dynamics for building a mathematical model of a bank's functioning at the macro and micro levels;
- artificial intelligence methods for managing activities using fuzzy logic.

Functional diagram of the IDSS tax authorities, shown in Fig. 2, shows the tasks that each of the models of the subsystem implements and the results of modeling, combined into a subsystem for outputting the results, displayed using the interface.

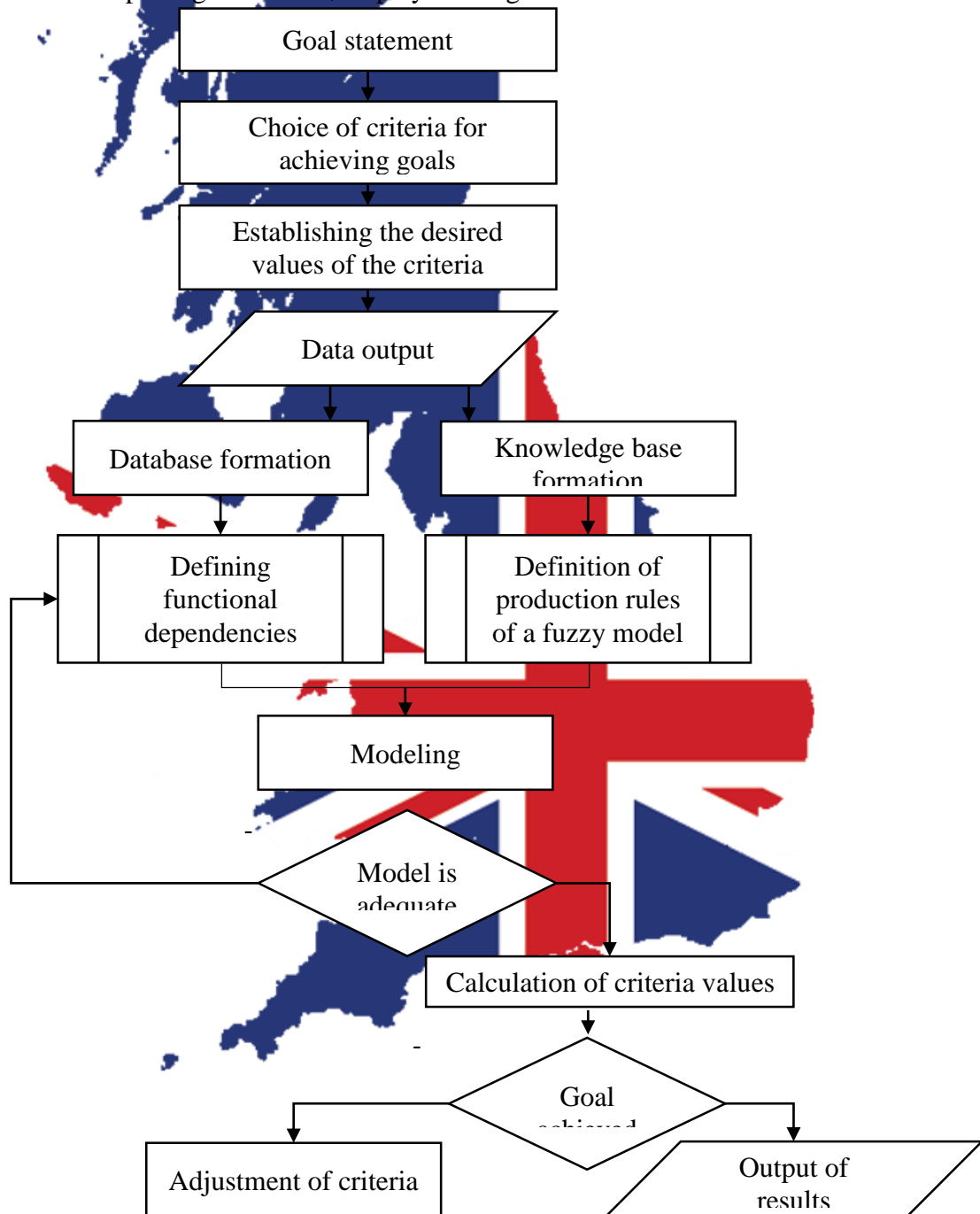


Figure 2 - Performance algorithm of intelligent decision support system

Thus, in the example of integrated management systems, intellectual decision support helps to increase management efficiency and reduce financial costs. In our case study of the tax authorities, it was the creation of an intellectual management environment, the formation and implementation of an expert system using the knowledge base. It should be noted that the use of intelligent control modules in integrated control systems remains the most optimal solution in terms of efficiency.

Implementation of IDSS developed for management modules in integrated management systems reduces material, time, and labor costs for decision making.

Evaluating the effectiveness of tax authorities by assessing whether the implementation of the management process using this system has achieved the set goal, allows you to predict the development of a particular tax office, taking into account the trends of the tax system based on an integrated management system. The use of artificial intelligence methods in the development of the knowledge base allows to manage not only financial indicators, but also the qualitative characteristics of the system. The prospect of further research is the development of appropriate software that will make the intelligent system work.

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