

THE AUTOMATED INFORMATIONAL-EXPERT SYSTEMS TO DETERMINE PRIORITIES OF MEAT INDUSTRY DEVELOPMENT

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Keywords: forecast, examination, evaluation, ranking, priorities

One of the most important functions in management of the scientific and technological progress in agribusiness including that in the meat industry, is to establish a set of the top priority projects of research and development aiming at concentration of certain resources on them. This urges to compare a variety of problems in science and engineering, as well as alternative ways for their solution.

It needs to be noted that the simultaneous analysis of numerous projects and choosing among them the most promising ones with taking into account financial constraints, limitations as to time of implementing as well as to material and other inputs, is a rather complicated and difficult problem from the economico-mathematical standpoint. In these circumstances, a role of the modern computational means increases. The optimum alternative is to apply personal computers and expert information which whenever possible should be supplemented by unbiased economic and technological data. PC application would allow automated collection, processing, storage and retrieval of information on innovative projects.

To achieve this goal, the automated informational-expert system (AIES) has been set up comprising five functional blocks, as follows:

- a database on the projects being analyzed;
- a database on the experts participating in the procedure of evaluation and choice of promising projects;
- a block for performing the expert examination procedure;
- a block for comparative analyzing the projects and the priority-ranking selection of the most promising ones; and
- a block for representation of the analysis results and option of the projects.

The initial data for AIES include suggestions on innovative projects submitted by research institutions and production companies of a meat industry. After preliminary screening when the projects are rejected which do not meet requirements as regards representation of requests, the relevant information is entered into the database on the projects being analyzed.

The initial background data also include the information on a set of experts comprising scientists, researchers and practitioners in the meat industry. Of them appropriate teams are formed joining those experts capable of generating a qualified opinion on the appropriate offered research projects. The information on these teams of experts is also put in a database.

The initial background data contain the basic requirements imposed upon the projects: restrictions on time of accomplishing the projects and on amounts of financing both the individual projects and their sets embracing the whole topic directions; demands for inputs; and total number of the projects which can be funded, etc.

The database on the projects to be analyzed contains information on the submitted projects according to the adopted format. To set up the database, elaborating the system of parameters and characteristics describing particular projects is needed as a key prerequisite. It

can be based on an informational card for an innovative project which reflects in the structural form goals and tasks of the project, its role in resolving the problems of meat industry development, a degree of urgency and other needed information enabling the qualified conclusion to be deduced about expediency and expected performance of the project. In accordance with the informational card, the database has the following structure: the meat industry sector - a research and development direction - a scientific-technological problem - innovative projects.

This database comprises evaluations made by experts for each project and information on a set of the experts involved to evaluate the projects.

An access to the database for experts should be restricted, therefore a password entry system is applied.

For examination purposes information relating to the project is retrieved from the appropriate database on the projects to be analyzed. The project parameters being assessed by the experts can be arbitrarily classified into two groups. The first group is evaluated through choosing by an expert one of suggested indicator of a given parameter. Each version of an answer is evaluated by means of the appropriate scale of score marks. The second group of parameters is assessed by the expert on the basis of previously received textual or other information by putting the score marks from their adopted range (an evaluation scale)

After the both groups of parameters have been assessed by the expert, the whole set of information is recorded in the database containing the relevant project.

In the block for performing examination, the expert has possibility to rank a set of parameters used for assessing projects, i.e., his own individual evaluation scale for all parameters is thus set up. This has been done to ensure maximum flexibility of the expert method used.

Expert evaluation scores for a project or a group of projects retrieved from the appropriate database serve as the starting information for the block operation. On the basis of the information a target function is established for individual projects or a group of projects

The target function from the mathematical viewpoint is a function of many variables which include projects and their parameters. To select the most promising projects, a maximum of the target function must be found out, with observance of necessary conditions and requirements imposed on projects. The appropriate mathematical algorithm of search for the maximum is governed by particular conditions.

The next stage is ranking, i.e., proper arrangement of projects with respect to their importance or priority and determination of those parameters conforming to the maximum of a target function.

In conclusion of the block operation, the results of economico-mathematical computation are converted into the form convenient for further use and kept in a computer memory.

The block for retrieval of analytical information is designed to represent the results of the computer's choice as regards the most promising projects of the meat industry science and engineering development in a pictorial, well visible form which is convenient for the further analysis. Such forms can include information output in the graphic representation as various diagrams on a display, or tabulated reports in the form of a file or appropriate listing. The main task of AIES is to undertake large amount of prior work and ensure the utmost objectivity evaluation procedure and option of the most promising projects.