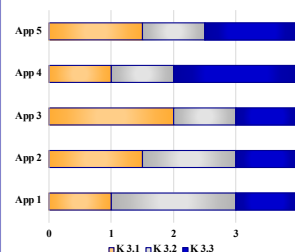


This article addresses the issue of improving the accuracy of expert assessments in evaluating innovative projects. The proposed approach to increase the accuracy of expert decisions is based on formalization of sub-criteria assessments using T. Saati's hierarchy analysis. Preliminary research shows the prospects of using the aforementioned approach. Further, the article discusses how this method can improve the accuracy of experts on the example of already existing methodological tools for evaluating innovation applications used by the Foundation for Assistance to Small Innovative Enterprises (FASIE).

INTRODUCTION

One of the components of modern National Innovation System (NIS) of the Russian Federation is Foundation for Assistance to Small Innovative Enterprises. The Foundation is primarily focused on development and improvement of mechanisms for public and private partnerships in the field of technology commercialization. Within the framework of its activities, the Foundation implements several major business support programs including those related to the National Technology Initiative (NTI) and digital economy. One of these programs is the "Razvitie" program. Support for these projects is provided on a grant basis. As a result, the task of conducting a highly professional expert evaluation that is followed by selection of the most promising applications is particularly important.

INITIAL ASSESSMENT

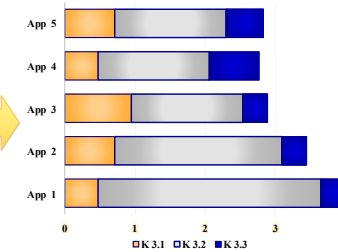


USING ALGORITHM

Using Saati's hierarchy analysis method, we construct a pairwise comparisons matrix and calculate the weight of each sub-criterion.

Sub-criterion	ID	W3j
Market analysis	K 3.1	0,196
Evaluation of business-model	K 3.2	0,657
Assessment of commercialization prospects	K 3.3	0,146

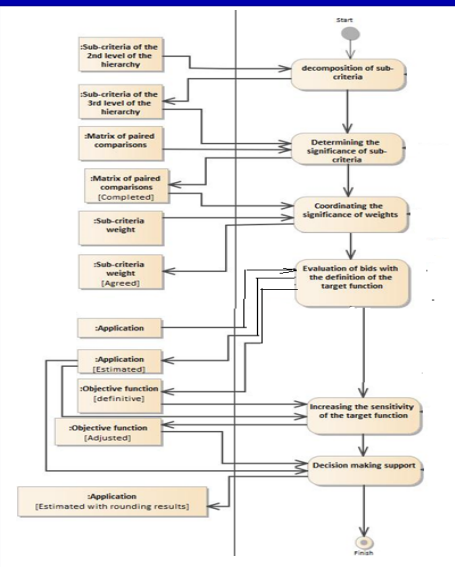
EVALUATION RESULTS



PROBLEM STATE

Let's look at all the work done by an expert during one of thematic competitions – the Digital technologies competition within the framework of the Razvitie program. Razvitie program was created by FASIE for companies that belong to the category of small businesses and have experience in scientific research. The program is designed to support companies with experience in innovation. According to regulations, for the purposes of increasing the objectivity of an independent examination, there must be at least two independent experts involved in the process. In case the decisions reached by the experts are inconsistent, the application is sent to another expert. When evaluating grant applications, the correspondence examination committee applies the following three criteria: novelty and effectiveness of proposed solutions, the achievability of the planned results of the innovation project, prospects of implementation and commercial realization of the product being created. Applications can receive a maximum of 5 points for each criterion. However, there is another possible way to improve the objectivity of experts, which is inherent in a more formalized assessment process.

PROPOSED ALGORITHM



PROPOSED APPROACH

Using pairwise comparisons we determine the weights of sub-criteria based on the Saati hierarchy analysis method. For the pairwise comparisons matrix, the vector of sub-criteria weights is calculated. Then, each element is normalized. The value W for each sub-criterion corresponds to the weight function, which reflects the weight of a sub-criterion in the formation of criteria at a higher level of the hierarchy.

We evaluate applications by sub-criteria with accuracy of up to 0.5 points. The expert evaluation of an application for the K_{ij} sub-criteria then, becomes X_{ij} . Using weights, we get the value of the target function U .

Increasing the sensitivity of a target function is possible with the application of comparative analysis to several applications. For example, an expert evaluates a certain number of applications and obtains the values of U_k target functions for each k -th application. Then, expert sets value T – the maximum score that the best application for this criterion is worth.

CONCLUSIONS

The challenge of improving the accuracy of expert evaluations is one of the most urgent tasks for organizations that support innovative projects on grant basis.

This article proposed an approach to improving the accuracy of expert assessments based on formalization of assessment of sub-criteria, using the analysis of T. Saati's hierarchies. Preliminary research showed the prospects of using the proposed approach.

In order to further increase the accuracy of expert performances, the authors plan to:

- calculate the weights of sub-criteria, coordinating the results with all the experts who evaluate a particular contest;
- computerize activities of experts, enabling them to work with visualized results of their assessments.

Acknowledgments

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