Algorithms and software of competitive analysis

(by the example of aerospace industry objects)

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Abstract

Solving problems of the competitive analysis refers to the modern theory of decision-making. Decision makers must have the necessary and sufficient information about new technologies in the industry, key competitors, potential risks, etc., and also have time to process it and make optimal decisions.

The aim of this work is the creation of competitive analysis tools that is methodical, mathematical and software systems for supporting decision-making on the basis of global competition modeling on the major stages of the life cycle of aerospace industry high-tech products.

In this article for the first time proposed an extension of the classical model of analysis of M.Porter's five competitive forces – a model of global competition; also proposed methods for designing competitive strategy and forecasting the state of the industry markets on the basis of the behavior of intelligent agents, game theory and

decision-making theory, methods of analysis of the competitiveness of high-tech product. Among the obtained results are the following:

1. Developed the model of global competition in the aerospace industry. The model is characterized by introducing new forces/agents into game: complements and influentors, and also model contains self-similar hierarchical market subsystems.
2. Proposed the method of analysis of competition in the key stages of the product life cycle - a) scientific and technical b) technological and c) market.
3. Developed the mathematical methods of designing competitive strategies, the behavior of intelligent agents, predicting the state of the industry markets, quantitative assessment of the competitiveness of high-tech products manufacturers.
4. Developed a software package Competiton which is based on the model of global competition, consisting of a support system for decision-making and automated data collection module. Also developed the algorithms and special software for effective data collection and analysis.
5. As a result of using Competition software packege was developed recommendations to improve the competitiveness of the medical information systems for medical-flight examination, based on the collection and analysis of evidence of primary information sensors using biofeedback techniques. These recommendations form the basis for the creation of medical information-analytical system DigitalMed.

The developed models, algorithms and software used in the analysis of global competition for existing businesses of the aerospace industry and has shown its effectiveness.

Keywords: Model of global competition, competitive analysis, intelligent agents, complements and influentors, software and computer system Competition.

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