

A Fuzzy Hybrid Decision Support System for Naval Base Place Selection in a Foreign Country

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Abstract : In this study, an Analytic Hierarchy Process and Analytic Network Process Decision Support System (DSS) model for determination of a navy base place in another country is proposed together with a decision support software (DESTEC 1.0) developed using C Sharp programming language. The proposed software also has the ability of performing the fuzzy models (Fuzzy AHP and Fuzzy ANP) of the proposed DSS to cope with the ambiguous and linguistic nature of the model. The AHP and ANP model, for a decision support for selecting the best place among the alternatives, including the criteria and alternatives, is developed and solved by the experts from Turkish Navy and Turkish academicians related to international relations branches of the universities in Turkey. Also, the questionnaires used for weighting of the criteria and the alternatives are filled by these experts. Some of our alternatives are: economic and political stability of the third country, the effect of another super power in that country, historical relations, security in that country, social facilities in the city in which the base will be built, the transportation security and difficulty from a main city that have an airport to the city will have the base etc. Over 20 criteria like these are determined which are categorized in social, political, economic and military aspects. As a result all the criteria and three alternatives are evaluated by different people who have background and experience to weight the criteria and alternatives as it must be in AHP and ANP evaluation system. The alternatives got their degrees all between 0 - 1 and the total is 1. At the end the DSS advises one of the alternatives as the best one to the decision maker according to the developed model and the evaluations of the experts.

Keywords : analytic hierarchical process, analytic network process, fuzzy logic, naval base place selection, multiple criteria decision making

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