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An Application of the Multiple Criteria Decision Making (MCDM) Analysis to the Selection of a New Hub Airport

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Abstract

The paper illustrates the application of three Multiple-Criteria Decision-Making (MCDM) methods to the problem of the selection of a new hub airport for a hypothetical European Union (EU) airline assumed to operate within the EU liberalised air transport market. The three MCDM methods used are SAW (Simple Additive Weighting), TOPSIS (Technique for Order Preference by Similarity to the Ideal Solution) and AHP (Analytic Hierarchy Process), and they are applied to a preselected set of alternative airports. The attributes (criteria) are defined to express the performance of particular alternatives (airports) relevant for a Decision-Maker (DM), in this case the EU airline in question.

In addition to illustrating the three methods, this application of three different MCDM methods is intended to lead to a preliminary judgment about their usefulness as supplementary decision-making tools for eventual practical use. The example in which seven preselected European airports are ranked according to nine performance criteria, indicates that all three methods, if applied to the same problem and using the same method for determining the importance of the different criteria, produce the same results.

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