CONSIDERATIONS ON THE APPLICATION OF AHP/ANP METHODOLOGIES TO DECISIONS CONCERNING A RAILWAY INFRASTRUCTURE

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ABSTRACT

The objective of the paper is to present the results of the application of AHP and ANP to support a strategic decision in the field of railway transportation in Italy. The problem issue involves various actors in the process of choosing the most promising alternative among four different infrastructural projects. At a first stage the problem was analyzed and modeled following the AHP methodology: a hierarchy was constructed and relative priorities were obtained by means of a panel of experts. During the assessment process, some considerations arose about the complexity of the problem and, as a consequence, about the effectiveness of the AHP basic hypotheses. This led to a further stage of the assessment process. The aim of this new phase was to explicitly include within the process interactions between different clusters of the decision model through the ANP approach. The structure of this second model enriched the previous hierarchy by considering the most evident feed-back relations, so the ANP data were basically the same as in AHP. Finally, the same study case was modeled as an ANP network with the BOCR scheme. This final stage required a very profound (and time-consuming) comprehension of the matter both by the analysts and by the actors involved in the process. The contribution of this work to the discussion, is to draw a comparison between the AHP and the ANP paradigms for decision aiding and to propose some considerations on their application in a specific problem situation.

Keywords: ANP, decision aid, railway, transportation, case study

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