

## Combining Analytical Hierarchy Process and TOPSIS Approaches for Supplier Selection in a Cable Company

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In the competitive business environment of the 21st century, organizations must reply quickly and precisely to customer demands. The choice of suppliers and their performance assessment are becoming major challenges that face supply chain managers or directors. Evaluating suppliers and selecting one of them are complicated tasks due to the fact that various criteria or objectives must be considered in the decision making process. Also in many real world cases the criteria are not equally important for the purchase managers. Numerous decision making techniques have been offered to handle with the supplier selection problem. In this study, we proposed a supplier selection analysis model considering both Analytic Hierarchy Process and TOPSIS method. Subjective and objective opinions of purchase managers/experts turn into quantitative form with Analytic Hierarchy Process. Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) technique is used for calculating the supplier's ratings.

The aim of this paper is to determine the appropriate supplier providing the most customer satisfaction for the criteria identified in the supply chain. In this paper, data taken from a well-known cable manufacturing company in Turkey is used to illustrate the supplier selection procedure. Due to the fact that main raw material used in all cables, the company strongly focuses on supply of the Electrolytic Copper Cathode. The company detects eight different criteria for procurement of the Electrolytic Copper Cathode. These are origin, quality, availability, cost, delivery requirements, cost of conveyance, and quality certificates. Apparently, supplier selection is a multi-criteria problem that includes both quantitative and qualitative factors. It is necessary to make trade-off between these tangible and intangible factors while considering a suitable supplier. There are four firms providing the Electrolytic Copper Cathode for the company. In analyzing the data, Analytical Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) methodologies are used for the outranking of supplier alternatives.

**Keywords:** Supplier Selection, Multi Criteria Decision Making, Analytical Hierarchy Process (AHP), TOPSIS Method, Cable Sector.