

Fuzzy multiple goal programming applied to TFT-LCD supplier selection by
downstream manufacturers

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Abstract

In today's highly competitive environment, a good supply chain relationship is essential for a company to survive and to acquire reasonable profit. While a few large companies may be able to vertically integrate from the design stage to the final distribution of the entire supply chain, most companies can only focus on their specialized functions and to cooperate with upstream or downstream companies. Supplier selection, as a result, is very important for maintaining strategic alliances. The objective of this paper is to develop a fuzzy multiple goal programming (FMGP) model to help downstream companies to select thin film transistor liquid crystal display (TFT-LCD) suppliers for cooperation. Fuzzy analytic hierarchy process (FAHP) is applied first to analyze the importance of multiple factors by incorporating experts' opinion, and these factors include cost, yield and number of suppliers. Multi-choice goal programming is used next to consider the limits of various resources and to formulate the constraints. From the experimental design and examination, we can testify that the proposed model not only can consider multi-choice goals, decision making behavior and limit of resources, it can also allocate the purchase among the selected supplier(s).

Keyword : Supplier selection; Performance; TFT-LCD; Fuzzy multiple goal programming, Fuzzy analytic hierarchy process.