A fuzzy ANP model for supplier selection as applied to IC packaging

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Abstract

Supplier selection has been a popular topic since the selection of the most appropriate supplier for cooperation is being increasingly important for the success of an enterprise. The problem is multi-criteria in nature, and a variety of multi-criteria decision making methodologies have been proposed. However, most of them did not take into account the interrelationships among the critical success factors and the fuzziness of the data involved in deciding the preferences of the factors. The objective of this research is to propose a fuzzy analytic network process (FANP) model to evaluate various aspects of suppliers. With the consultation with the experts, the proposed model can consider the feedback and interdependency of factors in a network, and the factors are pairwise compared under an uncertain environment. The weights of factors can be calculated, and the final priority of suppliers obtained. Semiconductor industry becomes increasingly globalize competitive nowadays, and a good supply chain relationship is essential for a company to survive and to acquire reasonable profit. Thus, a case study of IC packaging company selection in Taiwan is presented, and the proposed model is applied to facilitate the decision process. The priorities of the factors and the ranking of the suppliers can be a recommendation or reference for decision makers when making a supplier evaluation and selection decision.