

A supplier evaluation model for the food industry

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Abstract

Food safety incidents occur frequently in many countries, especially in the developing countries. Food safety is a growing public health concern because foodborne diseases and food safety threats may cause substantial costs to individuals, the food industry and the economy. Due to these endless food safety scandals, firms in the food industry need to reconsider their outsourcing decisions. Food firms need to know how to evaluate and select the suppliers, not only based on the cost, but also the food safety, the quality of the materials and the credibility of the suppliers, etc. A comprehensive model, by integrating the benefits, opportunities, costs and risks (BOCR) concept, the interpretive structural modeling (ISM), the analytic network process (ANP), and the fuzzy set theory, is constructed for evaluating suppliers. The BOCR concept is applied first to list the evaluation factors under the four merits, and the ISM is adopted next to understand the interrelationships among the evaluation factors and to construct an evaluation network. The ANP is then used to evaluate the suppliers under the network. Because of the uncertain nature of the problem, the fuzzy set theory is used in the model. Finally, a case study of a food manufacturer in evaluating and ranking suppliers is presented to examine the practicality of the proposed model. By applying the model, decision makers can evaluate the expected performance of each supplier by considering various important factors.

Keyword : benefits, opportunities, costs and risks (BOCR) , interpretive structural modeling (ISM), analytic network process (ANP), fuzzy set

theory