

An Integrated Approach for Innovative Product Development and Optimal Manufacturer Selection

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Abstract

This study develops an integrated process model for innovative product development and optimal manufacturer selection by incorporating quality function deployment (QFD) and the technique for order of preference by similarity to ideal solution (TOPSIS), referred to as the "QFD-TOPSIS-method-based approach." First, QFD is applied to determine the importance weights of customer requirements (CRs) and rank the technical importance of engineering characteristics (ECs). Next, the particular EC and its results are regarded as the criteria and weights into TOPSIS, respectively. Finally, the TOPSIS method is adopted to evaluate and select the optimal manufacturer for implementing innovative product development. A case study is used to illustrate the procedure of the proposed method. The method proposed in this study can not only determine the evaluation criteria and weights of TOPSIS using QFD results, but can also help design and produce more sophisticated products and reduce search cost and time for selecting the optimal manufacturer.

Keywords: New product development, manufacturer selection, QFD, TOPSIS.