An integrated fuzzy QFD framework for new product development

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Abstract

An important source of competitive advantage, survival and renewal for firms is the successful new product development (NPD). Quality function deployment (QFD) aims to facilitate the NPD process from product conceptualization to production requirements; however, conventional QFD has its shortcomings. Even though modified QFD models have been proposed in literature, a comprehensive model is necessary. In this paper, factors in each phase of the QFD is prepared first through literature review and interview with domain experts. Fuzzy Delphi method (FDM) is adopted to select the critical factors, and fuzzy interpretive structural modeling (FISM) is applied to determine the relationships among the critical factors. The results are then used to construct houses of quality (HOQs) for QFD, which is incorporated by fuzzy analytic network process (FANP). A case study of a thin film transistor liquid crystal display (TFT-LCD) firm is carried out to verify the practicality of the proposed framework.

Keyword：New product development (NPD)‧Quality function deployment (QFD)‧Analytic network process (ANP)‧Interpretive structural modeling (ISM)