

Competitor Integration with Voice of Customer Ratings in QFD Studies Using Geometric Mean Based on AHP

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Abstract : Quality Function Deployment (QFD) is structured approach. It has been used to improve the quality of products and process in a wide range of fields. Using this systematic tool, practitioners normally rank Voice of Customer ratings (VoCs) in order to produce Improvement Ratios (IRs) which become the basis for prioritising process / product design or improvement activities. In one matrix of the House of Quality (HOQ) competitors are rated. The method of obtaining improvement ratios (IRs) does not always integrate the competitors' rating in a systematic way that fully utilises competitor rating information. This can have the effect of diverting QFD practitioners' attention from a potentially important VOC to less important VOC. In order to enhance QFD analysis, we present a more systematic method for integrating competitor ratings, utilising the geometric mean of the customer rating matrix. In this paper we develop a new approach, based on the Analytic Hierarchy Process (AHP), in which we generating a matrix of multiple comparisons of all competitors, and derive a geometric mean for each competitor. For each VOC an improved IR is derived which-we argue herein - enhances the initial VOC importance ratings by integrating more information about competitor performance. In this way, our method can help overcome one of the possible shortcomings of QFD. We then use a published QFD example from literature as a case study to demonstrate the use of the new AHP-based IRs, and show how these can be used to re-rank existing VOCs to -arguably- better achieve the goal of customer satisfaction in relation VOC ratings and competitors' rankings. We demonstrate how two dimensional AHP-based geometric mean derived from the multiple competitor comparisons matrix can be useful for analysing competitors' rankings. Our method utilises an established methodology (AHP) applied within an established application (QFD), but in an original way (through the competitor analysis matrix), to achieve a novel improvement.

Keywords : quality function deployment, geometric mean, improvement ratio, AHP, competitors ratings

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