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# An optimal design for process quality improvement: modelling and application

Jen-Ming Chen & Jia-Chi Tsou

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## Abstract

Existing research works on process quality improvement focus largely on the linkages between quality improvement cost and production economics such as set-up cost and defect rate reduction. This paper deals with the optimal design problem for process improvement by balancing the sunk investment cost and revenue increments due to the process improvement. We develop an optimal model based on Taguchi cost functions. The model is validated through a real case study in automotive industry where the 6-sigma DMAIC methodology has been applied. According to this research, the management can adjust the investment on prevention and appraisal costs on quality improvement that enhances process capability, reduces product defect rate and, as a result, generates remarkable financial return.

Keywords:

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JEN-MING CHEN is a Professor at the Institute of Industrial Management at the National Central University, Taiwan. He received a BS in Industrial Management Science from the National Cheng Kung University, Taiwan in 1983, an MS in Industrial Engineering from the University of Arizona in 1988, and a PhD in Industrial Engineering from the Pennsylvania State University in 1992. His research interests include inventory and supply chain management, and pricing and yield management. He is an active member of several professional organizations, including Informs, DSI and IIE. Dr Chen is the recipient of the George B. Dantzig Dissertation Award from the Informs and the recipient of the IIE Doctoral Dissertation Award, both in 1994.

JIA-CHI TSOU, 6-sigma Master Black Belt at Ford Motor Company, is currently a doctoral student at the Institute of Industrial Management at the National Central University, Taiwan. He graduated with an MBA in Small and Medium Enterprises (SMEs) from the University of Liverpool, UK. He also gained an MS and a BS in Mechanical Engineering at the National Central University, Taiwan. Mr Tsou has extensive experience in quality assurance, production systems and supplier management in the automotive industry. His research interests include quality management and yield management in the automotive industry.

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