Editorial

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Biographical notes: Sai Sundarakrishna is a Senior Researcher in the India Science Laboratory of General Motors Global R&D, Bangalore, India. He focuses in the areas of warranty planning and forecasting, multicriteria decision making and market research methods. He did his Bachelor's Degree in Mechanical Engineering at PSG College of Technology, Coimbatore, and Master's Degree in Industrial Systems Engineering at VPISU, Virginia, USA. He has served as a Research Associate at Phoenix Integrations, Virginia, and as an analyst with Mahindra-British Telecom and P&O Neddloyd. He has won the Best Paper Award in the WCM conference at San Diego (2007), CA. He has been awarded three Trade Secrets by General Motors Corporation. He was a part of the 2006 European-US MDO colloquium held at Gottingen, Germany. He has participated in several conferences and provided several invited lectures.

N.R. Srinivasa Raghavan is a Lab Group Manager and Staff Researcher in the India Science Laboratory of General Motors Technical Center in Bangalore, India. He leads a group that focuses in the areas of market research methods, probabilistic reasoning and analysis methods, and stochastic optimisation as relevant to product planning. Prior to joining General Motors, he was an Associate Professor at the Indian Institute of Science at Bangalore where he supervised 50 graduate students including five PhD and five MS theses. He collaborated with various industrial partners including Intel, GM, Semiconductor Research Consortium, Unilever, SAP, Infosys, Bharath Heavy Electricals Ltd., etc. He published over 85 research papers in various international journals and conferences. He is a mechanical engineer by training, and has a Master's Degree in Operations Research, and a PhD in Computer Science. He has been acclaimed with Young Engineer Award of the Indian National Academy of Engineering, a Young Scientist Fellowship by the Department of Science and Technology Government of India and Young Associate by the Indian Academy of Sciences.

Quality, as a product attribute, is a complex metaphor often based on quantifiable technical factors like reliability and durability and certain qualitative perceptual factors like brand image, product finish, etc. Reliability and durability are time-based observables describing the fitness of a product to its promise. Warranty is the tangible cost of Quality/Reliability/Durability (QRD) for a business house. Through this special issue, we have compiled and presented latest research from around the globe that we believe provide insightful discussions on the various facets of QRD and their impact on warranty, from multiple perspectives: systemic perspective, policy perspective, product-life cycle perspective and the product-strategy cum operations perspective.

Systemic perspective

The opening theme of this special issue presents a systemic view of the warranty world. *D.N.P. Murthy and W.R. Blischke* discuss the multiple perspectives of warranty management that relate the design reliability to the field reliability. They allude to the gaps that are often left gaping owing to the consideration of only failure data during warranty analysis and motivate the need for supplementary data for warranty analysis and decision-making. They present the different generations of warranty management in practice, with the associated issues and challenges in terms of warranty data. *Bharatendra K. Rai* deals with the data maturation process of the warranty performance indicators of a company. He discusses the impact of this process on corporate decision-making. Further up, he details the factors that contribute to such a process and the nature of their influence on the warranty performance indicators through experimental simulation studies.

Policy perspective

Sudripto De, Arindam Das and Ashish Surekha propose a root cause analysis model for product failures and argue for the integration of the warranty field failure data with the internal quality management data, to reduce the Detection-to-correction cycle time and save warranty costs. This would assume significance during the systems planning and integration phase of product development. *Dimitar Christozov, Stefanka Chukova and Jeff Robinson* discuss a piece-wise linear stratification of the incompletely observed mileage-based automotive claims data to estimate the mean cumulative function of warranty claims. This approach is expected to have significant ramifications on the future warranty claims based on mileage, which could be insightful for determining warranty policy decisions. *Raja Jayaraman and Timothy I. Matis* study a non-renewing 2-D warranty policy for repairable products and obtain expressions for expected cost to the manufacturer based on 2 repair-replacement strategies.

Product perspective (Operational/Strategic)

M. Jehanzeb Noor and Daniel E. Whitney investigate the interactions and conflicts between certain key attributes of vehicle side-body closures. Highlighting the needs for standardisation of the processes, they propose the Datum Flow Chain method to manage the technical product interfaces better for enhanced quality and warranty performance. *E.A. Cudney et al.* discuss T-method (referred as Taguchi's robust design principles), using a forecasting case study to calculate an overall vehicle cost prediction based on the signal-to-noise ratio without the use of Gram-Schmidt orthogonalisation. *Pei-Hsi Lee et al.* propose the design of Double sampling s-charts and show their relative efficiency over Shewhart's charts, in the context of semiconductor processing industry

that uses data obtained from destructive testing. Using a real case of wire bonding process of IC packaging, they demonstrate the effectiveness of proposed DS's charts in reducing the sample size of destructive testing.

Product perspective (Lifecycle)

Mahmood Shafiee et al. propose a cost model to find an optimal upgrade action time (a brief time to test products before their release to the market) by trading off the reduction in warranty servicing cost with the increase in upgrade action cost for a second-hand electrical component sold under various warranty policies (failure free, rebate warranty and a combination of free replacement and lump sum). *Sanjeev Jha et al.* conceptualise customer service as a complaint management process based on justice theory. They examine the impact of complaint management process on customer satisfaction and repurchase intention using structural equation modelling analysis.

We acknowledge various people who have greatly assisted us in this endeavour. First, we thank all the authors for their insightful contributions. Their immediate acceptance of our requests to contribute to a special issue really motivated us to pursue this artwork. We greatly acknowledge their patience and unstinted cooperation during the course of this special issue. We are glad that we had a team of high-quality and distinguished reviewers, who through their valuable comments significantly enhanced the quality of this compilation. We are grateful to our colleagues and leaders within GM for their invaluable support and motivation during the course of this special issue. We also personally thank the Inderscience publishing house, especially the Editor-in-Chief Dr. Mohammed Dorgham who was instrumental behind this special issue compilation.

We sincerely hope that this issue would make a useful reading for researchers and practitioners alike and would stimulate further interest in this area of work.