



TRANSACTIONS FROM
THE SYMPOSIUM ON
QUALITY FUNCTION DEPLOYMENT

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2000: 12th Symposium on QFD (ISBN1-889477-12-5)

Aerospace / Aviation 2000

Measuring Competitiveness in Service Design; Decisions based on Customer's Needs. by Dr. Thomas Fehlmann, Euro Project Office AG, IT Quality Group, Switzerland. Fast decision making is key in today's markets, especially in the airlines industry. QFD, in conjunction with New Lancaester Strategy, provides a means to make difficult decisions right, in very short time. This approach has brought Swissair a means for continuous measurements and focused improvements with a clear and unambiguous metric and is now part of the regular marketing research process.

The Collaborative Innovation (CI) Process by Dr. Larry Zeidner and Dr. Ralph Wood, United Technologies Research Center, US. The Collaborative Innovation (CI) process, developed at United Technologies Research Center (UTRC), is an integrated collection of best-practice design methods (enhanced and simplified QFD and TRIZ) to support Integrated Product Development (IPD) teams during conceptual design. Over the past 3 years, CI has been applied to a wide range of UTC innovation efforts, enabling an IPD team to: a) focus their innovation efforts on opportunities of the greatest stakeholder value potential, b) use stakeholder value to guide concept evaluation and selection, and c) create a development plan that will reduce risk as quickly as possible.

Automotive 2000

Improving the Nissan "Crew" with Reverse QFD by Noriharu Kaneko, Service Quality Management (Japan). Japan. The necessity to continue improving quality of a newly development product through QFD will be illustrated by Nissan Taxi Cab "Crew" customer satisfaction survey example. Based on market surveys conducted after the release of a new model, this paper suggests future improvements needed in the next model and a job flow to achieve them.

An Application of QFD to the Shop Floor Daily Routine Management by Leonardo Pereira Santiago, Flávio de Aguiar Araújo, Lin Chih Cheng, Federal University of Minas Gerais, Belo Horizonte, Minas Gerais, Brazil. How QFD was used for assuring the quality of shop floor management in the daily routine of a manufacturing firm. Shows how QFD can help the shop floor solve the negative voice of customer by selecting the main working place of the manufacturing process.

Enlarging QFD Methodology to Include Forecasts of Market Share and Profit by Harry E. Cook, Head, Department of General Engineering, University of Illinois at Urbana-Champaign, USA. Taylors expansion in market segment provides a rigorous phenomenological basis for making value versus cost trade-offs for new product development and yields a straightforward marketing research method for assessing the value of proposed product improvements. Using the first stage of QFD, a list of customer needs are identified and converted into product system attributes. Value curves for key system level attributes are used with cost estimates to make trade-off assessments and also to determine Taguchi's "cost of inferior quality." Through a variety of automotive and construction equipment applications, the paper reviews how well they achieved both variable cost and value needed to assure the bottom-line metrics of market share and profit.

Chemical 2000

Investigation and Research Concerning the Integration of TQM and ISO9000/14000/Responsible Care by Masao Sukuya, Dainippon Ink & Chemical Inc., Yusuke Ito, Naoki Tanaka, Yasutaka Kato and Kozo Koura, Asahi University, Japan. Integration of quality management (ISO 9000), environment management (ISO 14000), environment, safety and healthy management (Responsible Care: RC) and TQM through application of cross-functional management was tried and proved effective in this chemical industry research, conducted in cooperation with the Kashima Plant of the Dainippon Ink & Chemicals Inc, a certified ISO 9000/14000 organization which strives for RC.

Consumer Products 2000

A Study of Structure of Quality Contribution Degree in Customer Satisfaction by Michiteru Ono, Professor, Tamagawa University, Tokyo, and Noriyuki Neil Takeuchi, Integrated Quality Dynamics, Inc., USA. This paper presents a more efficient ways to improve customer satisfaction through use of QFD, by identifying attractive quality in satisfied factors, setting moderate quality in dissatisfied factors, and determining low-cost factors. Satisfied and dissatisfied factors are identified; their relationship and influence are analyzed through Factor Analysis and Covariance Structure Analysis for better product development process.

E-Commerce 2000

Continuous QFD - Employing QFD in Case of Fuzzy Development Tasks by Georg Herzwurm, Sixten Schockert, University of Cologne, Business Computing, Germany. When customer requirements are not well-defined and technologies are changing fast, traditional waterfall QFD is inappropriate for product development. Continuous QFD is a method to deal with this situation. This paper describes characteristics of unclear development tasks, translates them into QFD terminology and outlines consequences for the design of Continuous QFD projects. A case study on web-site development applying Continuous QFD will be presented.

Education 2000

Application of QFD to Developing Education Products for Northern Australia Beef Producers by Shane Blakeley, Rural Production Systems Pty Ltd, Mick Quirk, John Bertram, Felicity McIntosh, Queensland Beef Industry Institute, Department of Primary Industries, Bob Hunt, Graduate School of Management, Macquarie University, Australia. In two separate projects, Meat and Livestock Australia and the Queensland Beef Industry Institute used QFD to determine the education needs of beef producers with regards to beef cattle nutrition and to grazing land management. The first time such a process had been conducted within this industry, the projects provide insights into issues critical to the success of North Australian beef production enterprises. These

insights have enabled the organizations to design and deliver education products to enhance skills and consequently profitability of those producers.

Electronics, Computers, Telecommunications 2000

Inspection and Control of Raw Materials Applied to Electronic Ceramics Through the Quality Chart by J.C.S. Dias and P.A. Cauchick Miguel, *Quality Management & Metrology Group, Methodist University of Piracicaba (UNIMEP), Brazil*. This paper reports a study of raw material inspection by presenting a methodology to relate technical and managerial requirements. A quality chart has been developed relating technical and ISO 9001:2000 requirements and giving the level of importance of the relationships. This analysis identifies which ISO 9001 requirements have more impact on job functions.

Gemba Research in the Japanese Cellular Phone Market by Eric Ronney and Peter Olffe, *Nokia Mobile Phones*. The advantages for a mobile phone company of doing research in the Gemba are first explored. The paper then describes a research project that was carried out in Japan and describes how the research was designed to try to overcome the potential barriers posed by customer culture in order to obtain the maximum benefit from the research.

Healthcare, Medical Products, Pharmaceuticals 2000

Applying QFD in a Hospital Setting: A Study of Medical Quality by Dr. Yoji Akao and H. Fujimoto, *Asahi University, Japan*. The application of QFD in service industries concerns itself not only with quality as valued by the customer, but must also consider quality of the service operations themselves. Similarly, a medical facility must consider both the societal role of the hospital and the actions necessary to assure the health of the patient. This paper will demonstrate that metrics for clinical staff quality can be incorporated in the various QFD charts to clarify, evaluate, and manage medical quality.

Use of QFD to Develop Sales in a Medical Materials Market by Fatih Yenginol, *lecturer, Dokuz Eylul University Faculty of Business, Turkey*. A multinational medical materials producer, the major player in its market, is seeking ways to develop its sales. The sales department of the company has determined the gaps in the market. In this way, the company is going to be able to fill in these gaps with the help of Quality Function Deployment process.

Introduction of QFD Method to Our Original Medical Quality Improvement (MQI) Activity in Nerima General Hospital by T. Takahara, M.D., *Dept of Surgery*, S. Iida, M.D., *President*, and M. Fujimori, *Nerima General Hospital, Tokyo, Japan*. Since 1996, Nerima General Hospital has been executing their own Medical Quality Improvement (MQI) Process to improve quality and function of medical care. QFD and FMEA are a part of this year's declared focus. This paper presents introduction of QFD to our MQI activities which resulted in good outcome in both external and internal customer demands.

Software 2000

Software Quality Improvement by Quality Function Deployment by Yen-Fang Chu, *Graduate School of Resource Management, National Defense Management College, Huey-Der Chu, Department of Information Management, and Shan-Fa Wang, Taiwan, ROC*. The cost of quality refers to the cost incurred due to compliance and non-compliance to requirements. Considering this imbalance among the cost of quality, this paper introduces Quality Function Deployment (QFD) into the Information System Planning to decrease the failure cost and improve the quality of the software development process.

QFD and RequisitePro by Stuart Lesley, *SiloSmashers, USA*. QFD is a powerful method for bringing the voice of the customer to the entire organization. We have developed a way to physically link the results of QFD into the beginning of the design process. This method not only preserves the QFD effort, but also provides traceability throughout the solutions design and development life cycle.

Software QFD by Richard Zultner, *ZULTNER & CO., USA*. The application of QFD to software development requires a combination of understanding users, project management, and software development tools to assure that by concentrating our limited resources on those aspects relating to the most important needs of the customer, we can deliver more value to the customer than our competitors.

Training and Consulting 2000

Implementing TQManagement in a Multiculture Ambience by Dr. Tarik Sulimani, *Vice President, TQM & HR, Advanced Electronics Co.*, Dr. Nasreen Al-Dossary, *Assistant Manager, Saudi American Bank, Saudi Arabia*. Implementing TQM in developing nations with heavy reliance on foreign manpower is a challenge. It is a unique experience to maintain harmony among heterogeneous workers and experts from different continents, values and backgrounds. This paper points out cross-cultural sensitivities, highlights obstacles organizations may face and how to overcome cultural barriers. It describes the TQMization approach and implementation measures that can take place based on a study conducted in Saudi Arabia.

A Review of Applied Human Factors Techniques for Product Designers in Identifying the Voice of the Customer by Chee Weng Khong, *Centre for Collaborative Multimedia, Faculty of Creative Multimedia, Multimedia University, CyberJaya, Malaysia*. This paper addresses the human factors methods or techniques applied by designers throughout the product development process in identifying and to elicit customer trends and preferences, and map social and technological directions. A simple matrix diagram is proposed to support and aid the designer's awareness of appropriate human factors techniques to be applied.

General Model of Continuous Improvement Programs: Creating Fractal Organizations by Francisco Tamayo-Enríquez, *Quality Assurance Department Chief, Axa Yazaki, Nuevo Leon, Mexico*. Continuous Improvement Programs are generally models of organization and interaction between people with some emergent and some intended results. Recently, fractal models are achieving success in modeling complex natural phenomena. If organizational dynamics are natural phenomena, there is the

possibility of having a Generalized Model of Continuous Improvement Programs based on a fractal model. This will lead to Fractal Organizations through deployments, such as QFD and Policy Management, able to preserve the appropriate form and complexity at all different levels.

Minimum Information Loss Evaluations for QFD by *Ed Dean, The DFV Group, USA*. QFD has come under attack because of the means used for evaluation. Research has shown that individual preferences are not preserved by typical joint evaluation methods and has associated preference retention with information retention. This paper defines a generalized information for preferences, obtains the minimum information loss joint preference, and compares this approach in a QFD example with an evaluation approach recommended by voting research.

QFD is a Catalyst, not a Process; A New Way to Look at QFD by *Dilworth Lyman, ViewPoint & Understanding Enhancement, USA*. A new way to look at QFD, not as a process by itself, but as a catalyst to be applied to other processes. When QFD is applied to other processes, they are changed; old processes become more customer focused and proactive. We will look at the types of processes you can mix with QFD, what results and how it can even improve a bad process. We will look at the elements of QFD as they mix with the elements of other processes in many disciplines and show that there is no one right way to do QFD.

General Industry / Service 2000

Using the Gemba to Improve the Usefulness of FMEA by *John Terninko, Responsible Management, Inc., USA*. Using the different perspectives of a system provides different perspectives when visiting the Gemba. A system exists in time, space and relationships. A system's goal is to use its properties and functions to satisfy some need of its environment. Understanding these perspectives in the Gemba will yield a profound improvement on the usefulness of the associated FMEA. All potential failure modes and root causes often missed will be identified.

Hoshin and Strategic QFD Organizations: Where are they now? by *Dr. Robert A Hunt, Graduate School of Management, Macquarie University, Australia*. This paper reports on two organizations with more than three years applying Hoshin and QFD principles to their strategic transformation system (STS) and/or their offer innovation system (OIS). It addresses: How have these organizations benefited from applying QD? How have their systems evolved? What are their plans to further apply the principles? What would they have done differently and why? Have the QD systems become "the way we do business around here?"

The Quality Concert: A Multiple-Parameter Matrix Analysis by *Jack ReVelle, ReVelle Solutions, LLC, USA*. Several concepts, all QFD-related, are analyzed using a Y-shaped, multi-parameter matrix to determine the extent of their interrelationships. These concepts are the Kano Model and the Quality Concert composed of two parts, the Quality Quartet and the Quality Chorus. The Quality Quartet has four voices: that of the customer, engineer, manager, and the process. The Quality Chorus has three voices: that of society, government, and environment. The resulting model insures awareness of important factors in, around and about the marketplace.

The Universal Method for Technology Forecast: Does the Panacea Exist? by *Iouri Belski and Vladimir Shapiro, Department of Communication and Electronic Engineering, Royal Melbourne Institute of Technology, Australia*. This paper analyses the dependence of methodologies of forecasting on the requirements of the designer. The variety of outcomes of a process of forecasting is considered: from prediction of future characteristics of system elements to potential scenarios of systems and super-systems of the future.

Strategic Product Family Development by Extending the House of Quality by *Juergen Hoffmann, Fraunhofer Technology Development Group, Germany*. The extended House of Quality does not use single specifications to define product families - instead specification classes are formed. These specification classes encompass the area within which the specifications for all the products in the product family are contained. Experience has shown that it makes sense to form three specification classes, and combine these with factors such as cost and competitive comparisons for defining the specifications for product families from a strategic market perspective.

Customer and market input for product program development by *Knut Aasland, Detlef Blankenburg and Jarl Reitan, SINTEF Industrial Management, Norway*. One crucial question when developing product programs is: Which models and variants do we really need? To what degree can an attractive product make variation less necessary? To answer this, a deep understanding of customers and their behavior and decision patterns is important. Since this is not what designers and project managers in industry typically excel at, methods and tools are necessary.

QFD 2000: Integrating Supporting Methodologies into Quality Function Deployment by *Glenn Mazur, Japan Business Consultants, Ltd and QFD Institute, USA*. Competitiveness in the new millennium may belong more to those who can integrate a multitude of disciplines into a system, rather than to those who expect a single tool to do it all. The House of Quality is really more of a "great room" to which various "outbuildings" and other structures must connect. This paper shows where well-known quality and other tools such as Consumer Encounters, New Lanchester Strategy, Kansei Engineering, Theory of Constraints, TRIZ, Voice of Customer Analysis, FMEA, SPC, and other methods can be integrated into the New Product Development Process.

Leveraging TRIZ to Combine Ideas into Implementable Concepts by *Dana Clarke, Ideation International, Inc., USA*. Enhance the value of ideas via the integration of QFD and TRIZ to create "super concepts." TRIZ offers newly-developed techniques for combining complementary or competing ideas, thereby raising the effectiveness of the QFD process to meet and exceed customer expectations.

QFD with an Attitude! - "Obsolete your products so your competitors can't!" by *David Verduyn, C2C Solutions, USA*. QFD is an exceptional framework to integrate some of the "best" product development "tools". This paper illustrates how QFD must incorporate leading innovation strategies to attain or maintain leadership. Integration of the following disciplines will be clearly illustrated. 1) Compelling Innovation and Value Optimizing Algorithms for breakthrough ideas, 2) Patented AI Semantic Processing tools to create & retain corporate technical knowledge, and 3) FMEA so your impressive ideas don't fail!