In today's highly competitive industrial climate, and in times of limited company resources and a continual need to improve company performance in all areas, the use of effective and efficient tools and development methodologies for research and development (R&D) is one interesting avenue to follow. Thus, the question is not really whether they should be deployed or not, but rather which methodologies and best-practices should be used, and why, when and how they should be deployed.

Contemporary Quality Function Deployment for Product and Process Innovation: Towards Digital Transformation of Customer and Product Information in a New Knowledge-Based Approach introduces the reader to the industrial use of the Quality Function Development (QFD) methodology in product and process innovation. Customer, product, and production data related to each product family will be digitized in the matrix structures used in this methodology, and be made accessible, more transparent, and visible, thus facilitating a holistic product information perspective. Moreover, using this information in the creation of Integrated Knowledge Platforms (IKPs), supporting more digitalized product and process innovation work processes, will speed up product development and capture vital information to be used in your next-generation product innovation projects. From an overall company perspective, the well-proven ability of the QFD methodology to stimulate cross-functional product innovation will guide product innovation towards a new knowledge-based approach in its enhanced digital transformation and use of integrated customer, product, and production information.

Using the QFD methodology, you will learn how to create a retrievable and accumulated digitized company knowledge base, coupled with improved company communication. You will get better decision support, assisting in the development of better product specifications, and resulting in better products, and ultimately leading to improved customer satisfaction. The adoption of the QFD tool and matrices in building such well-structured knowledge-based platforms (IKPs) related to individual products or product families is the heart of the matter and the "hidden gem" of QFD methodology use.

The book aims to serve as a manual introducing the methodology and how to use it, offering a guiding framework, and being a handbook for the methodology’s industrial use for both newcomers and product developers. Furthermore, it offers new perspectives on a more efficient and effective use of the QFD methodology for the seasoned practitioner. This book can also serve as a textbook for students in all disciplines of the natural sciences, innovation management, product design, and engineering. Each part of the book concludes with a number of questions that can be used as learning instruments in lecturing and for more advanced tutorials.

Readership: Scholars in innovation and technology management; university students in the disciplines of technology, engineering and business administration; product innovators and managers of product innovation in manufacturing industries and the process industries.

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The Theory and Methodological Use of Quality Function Deployment in Industrial Product Development:

- The Theory of QFD and Related Matrices, Rooms, and Symbols — Getting Acquainted With the Fundamental Philosophy
- The Development and Manufacturing of Beer — An Introduction and Background for the Process-Industrial Illustrative Case
- Facilitating Methodologies for Enhanced Product Innovation
- Summing Up and Some Issues to Reflect Upon

Process-Industrial Product Innovation and the Use of the QFD Methodology as a Facilitating Development Tool:

- Contextual and Inherent Conditions for Innovation in the Process Industries
- The Process-Industrial Product Innovation Work Process
- A Review of QFD Use in the Process Industries — Lessons from the Past
- An Analysis of Necessary QFD System Capabilities for Enhanced Process-Industrial Product Innovation — Perspectives for the Future
- Summing Up and Some Issues to Reflect Upon

The “Voice of the Customer” and “House of Quality” — The Common Denominators and Matrices in All QFD Systems for All Manufacturing Industries:

- The Voice of the Customer — The Facilitating Instrument for an Improved “Market & Customer Understanding”
- The House of Quality — The Facilitating Instrument for an Improved Product & Competitor Understanding
- Matrix Analysis and Target Setting for New or Improved Products
- Summing Up and Some Issues to Reflect Upon

The Advanced Multiple Progression Quality Function Development System (mpQFD) — Introducing the Upstream & Downstream Matrices Adapted to Process-Industrial Conditions for Innovation:

- The Process Matrix — The Facilitating Instrument for an Improved “Process Understanding”
- The Raw Material Matrices — The Facilitating Instrument for an Improved “Raw Material Understanding”
- The Product Matrices — The Facilitating Instruments for an Improved “Understanding of Product Functionalities”
- Multiple Progression Within and Outside Company Demarcations — Addressing the Total Supply/Value Chain in Product Innovation
- Summing Up and Some Issues to Reflect Upon

Consolidating Matrix Information into Integrated Knowledge Platforms (IKPs) — New Perspectives on the Industrial Use of the QFD Methodology:

- Expected Company Outcomes from the Use of the QFD Development Methodology — Scientific Evidence from the Past
- A Review of the QFD Methodology in the Perspective of Company Knowledge Creation and Utilization — Discover the “Hidden Gem” of QFD Use in Product Innovation
- Consolidating the Knowledge and QFD Matrix Information into Coherent Reusable Integrated Knowledge Platforms (IKPs)
- Summing Up and Some Issues to Reflect Upon

Guidelines for Company Implementation of the Quality Function Deployment Methodology and Integrated Knowledge Platforms:

- General Success Factors for Company Use of the QFD Methodology
- Implementation of the mpQFD System and IKPs in the Company R&D Organization — Best-Practice Recommendations from a Seasoned QFD Facilitator
- Using QFD as the Company’s Select Methodology to Reinforce “Inter- and Intra- Organizational Integration” in Product Innovation
- Summing Up and Selected Questions About Quality Function Deployment (QFD) and Related Integrated Knowledge Platforms (IKPs)

About the Author

Professor Dr Thomas Lager, is an affiliated Professor at Mälardalen University, School of Innovation, Design and Engineering in Sweden. He is the General Manager of blinab “boutique” management consultancy in Sweden, in the area of Management of Innovation and Technology in the Process Industries.

He holds an MS degree in Mining Engineering from the Royal Institute of Technology in Sweden. He has a PhD in Mineral Processing, and a PhD in Business Administration and Economics from Luleå University of Technology. He was previously Professor and Chair in Innovation Management at University Mohammed VI Polytechnique in Morocco, and an affiliated Professor at Grenoble Ecole de Management in France. He was formerly Adjunct Professor and Director of the Centre for Management of Innovation and Technology in the Process Industry at Luleå University of Technology in Sweden. He has served 15 years in the Process Industry mainly in Sweden and Africa.

The content of this book is not only based on the author’s own research in Innovation Management but also relies extensively on the author’s industrial experiences as a facilitator of the QFD methodology in various sectors of the process industries. As Visiting Researcher invited by Professor Takao Fujisawa to Toyohashi University of Technology in Japan in the year 2000, the author also had the privilege of having the late Professor Yoji Akao as his mentor and prime supporter in the development of the Multiple Progression QFD (mpQFD) system. Now, the author wants to follow in Professor Akao’s footsteps by further developing the industrial use of the methodology to enhance company product innovation capabilities. The combination of profound theoretical insight with operational industry best practice in the use of the QFD methodology is the hallmark of this book.

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