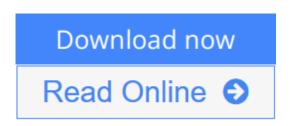


Quality Function Deployment: How to Make QFD Work for You

By Louis Cohen



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A structured planning process that systematically incorporates the voice of the customer into product design, Quality Function Deployment (QFD) has proven itself a highly effective development tool for creating globally competitive products - in software, hardware, services, and many other industries. < This book not only explains QFD fundamentals clearly and concisely, it takes you well beyond the basics to provide the advanced techniques, specific information, and concrete examples you need to implement QFD successfully and derive its full benefits. Of course, the book contains detailed information about the House of Quality, the most commonly used QFD matrix that relates customer needs to technical solutions. But rather than stopping there, it goes even further to explore the many possibilities for matrices that you can apply to every phase in product development - including multiple levels of design detail, quality improvement planning, process planning, manufacturing equipment planning, and value engineering planning. In addition, you will find concise, experienced-based guidance on all the practical aspects of implementing QFD from start to finish, including such issues as establishing organizational support, creating a schedule, and gathering customer data. The book also covers OFD's relationship to the product development cycle, as well as its impact on various functions within an organization. Most important, Quality Function Deployment: How to Make QFD Work For You helps you to see QFD as a collection of techniques and processes you can customize and adapt to your own real-life situations.

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Editorial Review

From the Back Cover

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"This is far and away the best book on QFD, a book that is very much needed by American and European industry."

- Don Clausing, Bernard M. Gordon Adjunct Professor of Engineering Innovation and Practice Massachusetts Institute of Technology

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About the Author

Lou Cohen, a well-known QFD practitioner, has spent 35 years as a product developer and quality manager in the computer industry. He is now a freelance consultant working with clients to apply QFD to products as diverse as laundry detergent, software, office furniture, credit card services, and medical instruments.

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Over the last twenty years, companies in the United States have moved toward new styles of doing business, based on overseas competitive pressures, the needs of global economies, and the advances of technology.

U.S. companies have taken many steps to become more competitive. Among them has been the adoption of the Total Quality Management (TQM) approach or one of its many aliases, all of which have stressed customer-driven planning, continuous improvement, and employee empowerment.

A key component of TQM is the adoption of "tools" to assist in creative thinking and problem solving. These are not physical tools, such as computers or micrometers; instead, they are *methods* that relate ideas to ideas, ideas to data, and data to data; that encourage team members to communicate more effectively with each other; and that help teams to effectively formulate business problems and their solutions.

Quality Function Deployment (QFD) is an adaptation of some of the TQM tools. In Japan, in the late sixties, QFD was invented to support the product design process (for designing large ships, in fact). As QFD itself evolved, it became clear to QFD practitioners that it could be used to support service development as well.

Today, its application goes considerably beyond product and service design, although those activities are quite commonly supported by QFD. QFD has been extended to apply to any planning process where a team has decided systematically to prioritize their possible responses to a given set of objectives. The objectives are called the "Whats,"(1) and the responses are called the "Hows." QFD provides a method for evaluating "How" a team should best accomplish the "Whats."

I first learned about QFD in January, 1986. Since then I have used QFD - and helped others use it - for software and hardware product design, service development, and many other special applications involving creative interpretations of the "What" and the "How" of QFD. You may assume that because I have written this book I must be enthusiastic about QFD. In fact, I have used QFD for my own projects, and I have helped other development and service groups use QFD on almost a continuous basis since those early months of 1986. I am continually amazed and delighted at the power and robustness of the method. Teams I work with are delighted with the results of QFD, because the process of using QFD helps the team ask the crucial questions whose answers will give them a highly competitive product or service.

Despite my enthusiasm for QFD, I have attempted to keep the hype out of this book. I am personally turned off by a hard sell - I like to gather the facts and make my own decisions. Therefore, except for a few instances of irrepressible enthusiasm, my style in this book has been mainly to present the information and let you, the reader, decide what's best for you. As for those readers who want reassurance that they are not wasting their time reading this book - let me tell you, QFD is an incredible development tool, with many surprising and powerful advantages. Read on!

Most of what I know about QFD comes from first-hand experience and from comparing notes with other QFD practitioners, who were forced to improvise practical solutions to problems as they encountered them. Indeed, the verbal tradition of QFD in the United States is quite extensive.

The books, articles, and case studies describing QFD and available today arrived too late to help me and my colleagues in 1986. When they did arrive, they focused on what QFD *is* or *could be*. The QFD experience itself has been generally glossed over, as if it were self-evident. Implementing QFD is anything but self-evident! The possibilities for wasting time and leading a team into a cul-de-sac are endless. Many QFD horror stories have at their root the uninformed decisions of an inexperienced QFD facilitator.

On the other hand, the possibilities for helping QFD teams save time and arrive at breakthroughs are abundant. Many QFD success stories have at their root the creative decisions of a capable QFD facilitator.

This book has been written to fill a gap still not addressed by the existing QFD literature in English. This book focuses on the *doing* of QFD. I've tried to address other aspects of QFD as well: parts of this book explain what QFD is, and how QFD can fit in with other organizational activities. But I feel the "QFD Handbook" part of this book is unique in that it provides detailed information on how QFD can successfully be implemented, along with a wide range of choices for customizing QFD, and their advantages and disadvantages.

I've taken special pains to discuss such practical issues as time estimates, group facilitation topics related to QFD, and practical shortcuts. I acquired some of this knowledge the hard way, by making mistakes, and by trying out new ideas and evolving them over the years. I acquired the rest by learning from my colleagues, and by adapting ideas from other disciplines. My goal in this book has been to make the QFD implementation path easier. If the book serves that purpose, then QFD will be used more widely in the United States, and we can hope for better products, better services, and greater market share as a result.

QFD, Software, and Services

Because of my background in software and computers, many of my early QFD experiences were related to planning for new versions of these types of products. For some reason, people seem to think that QFD must be applied differently to software than to other technologies. I have never understood that point of view, except perhaps as an excuse for not using QFD.

The basic problems of product design are universal: customers have needs that relate to using products; the needs must be addressed by designers who have to make hundreds or thousands of technical decisions; and there are never enough people, time, and dollars to put everything that could be imagined into a product or service.

These problems confront the developers of automobiles, cameras, hot-line service centers, school curricula, and even software. QFD can be used to help development teams decide how best to meet customer needs with available resources, regardless of the technology underlying the product or service.

Customers have their own language for expressing their needs. Each development team has *its* own language for expressing its technology and its decisions. The development team must make a translation between the customer's language and their technical language. QFD is a tool that helps teams systematically map out the relationships between the two languages.

Software engineers are fortunate in that *several* languages are available to them for expressing their top-level design: the disciplines of object-oriented design, structured design,(2,3) and structured analysis provide excellent methods for expressing the technical aspects of a software system. These languages can and have been used in software QFDs. Other technical language elements that software engineers have used in QFD are performance measures, subsystem modules, and brief descriptions of product functions. What works best in QFD is the technical language that the development team is most comfortable with. For more on Software QFD, please see Chapter 19.

Examples and Case Studies

In this book, I have freely used examples relating to many technologies and industries. For the most part these examples have come from my own experience, although I have modified them to help clarify the points I was trying to explain in the book. I hope that these examples will convince the reader by demonstration that QFD applies across the board for hardware, software, and service development, as well as for other forms of

strategic planning,

I hope the reader will enjoy the Word Processor example that I have used in many places in the book to illustrate various points. I chose this product because I assume most readers will have used word processors, and will identify with the customer needs, if not the internal design. This example is a mixture of pedagogy and fact; I hope it is detailed enough to help you understand QFD, and I am sure that it is sufficiently modified that it will not reveal any trade secrets of any word processor developers.

How to Read This Book

This book is divided into five parts. Each part looks at QFD from a different perspective.

Part I, About QFD, provides motivation for QFD and puts it into perspective within the framework of the global business environment of the last twenty years. It gives the briefest of overviews of what QFD is. It's equivalent to the type of fifteen-minute management summary I often gave to popularize QFD shortly after I first learned about it. It differs from the management overview in that I have tried to compile a chronology of key events in the U.S. that have lead to the popularization of QFD. Read this part if you are new to QFD, or if you would like to find out where it came from and how it has become so well known among product developers.

Part II, QFD at Ground Level, explains QFD in an expository fashion. It's a kind of textbook within a textbook. It explains each portion of the House of Quality in considerable detail. I hope it will be a useful reference for QFD implementors who are looking for detailed information about the HOQ. Read this part if you would like to be fully informed about the House of Quality.

Part III, QFD from 10,000 Feet, assumes the reader has some familiarity with QFD. It provides an organizational perspective on the way product and service development occurs. It shows how QFD can help organizations become more competitive by developing better products and services. Chapter 12 paints a picture of the way I've experienced it. If you want to introduce QFD into an organization, you'll find the ideas in Part III to be helpful for developing your strategy for organizational change.

Part IV, QFD Handbook, is where the rubber hits the road. It assumes you have decided to implement QFD, and it shows you how to start, what to anticipate, and how to finish successfully. I wish I had Part IV before I tried my first QFD. Over the years it seems I've made every imaginable mistake, as I've helped teams to use QFD. Part IV assembles the accumulated lessons from my mistakes and from those of many of my colleagues. Read this section before you try to implement QFD. I think it will be a good investment of your time.

Part V, Beyond the House of Quality, points the way to the extensions of the House of Quality that can take the development team all the way to the completion of their project. Although it is used predominantly for product planning, QFD has the potential to help the development team deploy the Voice of the Customer to every phase of development. Part V describes some of the possible paths teams can take after completing the HOQ. It also includes some topics that may be of interest only to some readers. These include specialized adaptations of QFD for software and service development, as well as for organizational planning. Read this part if you are comfortable with QFD concepts and are ready to make QFD the backbone of the entire development process.

Acknowledgments

I am grateful to many people who encouraged me to write this book and who helped me along the way. I am apprehensive about listing their names for fear I have forgotten someone important, but it must surely be better to acknowledge most of my supporters than none at all. First I must acknowledge my good friend and colleague Don Clausing, who started it all in so many ways, both for the nation and for me personally.

As I mentioned earlier, I have learned much of what I know about QFD from my fellow QFD practitioners. In addition, two organizations, the American Supplier Institute (ASI) and GOAL/QPC, have done much to train U.S. industry in QFD. For various reasons, geography among them, my personal contact with GOAL/QPC has been much more direct and extensive than with ASI. ASI's influence on my understanding of QFD is indirect, but still quite substantial, since so many of my QFD colleagues have been associated with ASI. I thank both these organizations, and their able leaders, Larry Sullivan and Bob King, for helping establish QFD as a key product development tool in the U.S.

For showing their faith in me and my message about QFD, my eternal thanks go to Russ Doane, Bob King, Cristina Davy, Catherine D'Abadie, Susan Ellis-Richard, Abbie Griffin, John Hauser, Kurt Hoffmeister, Karen Holtzblatt, Tony Roman Leon, Mary Ellen Lewandowki, Glenn Mazur, Jim Mills, Leslie Sisto, Rachel Oberai, Yogesh Parikh, Madhav Phadke, Bill Pardee, Ed Prentice, John Terninko, Steve Ungvari, John W. Wesner, and Richard E. Zultner.

Special thanks to my appropriately impatient and eternally helpful editor, Jennifer Joss, and to many others at Addison-Wesley whose professionalism has been such a great benefit to the book, including Tara Herries, Marty Rabinowitz, and Chris Sykes.

1. Credit is generally given to Harold Ross (General Motors) and Bill Eureka (American Supplier Institute) for the "What/How" terminology, which is now widely used by QFD practitioners in the U.S.

2. Edward Yourdon and Larry L. Constantine, "Structured Design: Fundamentals of a Discipline of Computer Program and System Design," Yourdon Press, A Prentice-Hall Company, 1979.

3. Chris Gane and Trish Sarson, "Structured Systems Analysis: Tools and Techniques," MCAUTO McDonnell Douglas, 1982.

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Users Review

From reader reviews:

Pat Billings:

The event that you get from Quality Function Deployment: How to Make QFD Work for You could be the more deep you excavating the information that hide within the words the more you get interested in reading it. It doesn't mean that this book is hard to recognise but Quality Function Deployment: How to Make QFD Work for You giving you excitement feeling of reading. The copy writer conveys their point in a number of way that can be understood by simply anyone who read this because the author of this guide is well-known enough. This kind of book also makes your own personal vocabulary increase well. It is therefore easy to understand then can go along with you, both in printed or e-book style are available. We highly recommend

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