

CHAPTER 10

QUALITY FUNCTION DEPLOYMENT

Expected Outcomes

Understand the basics associated with creating a quality function deployment matrix
Learn QFD application and advantages of using it

**Note: Most contents of this slide adapted from Besterfield, "Total Quality Management", 2003*

Chapter Outline

- Introduction
- QFD Team
- Benefits of QFD
- The Voice of the Customer
- House of Quality
- Building a House of Quality
- QFD Process

Lesson Outcomes

- Understand the basics associated with creating a quality function deployment matrix
- Learn QFD application and advantages of using it



Introduction

- Dr. Mizuno (Professor Emeritus) of the Tokyo Institute of Technology initiate the QFD system
- First application was at Mitsubishi Heavy Industries in 1972
- Successfully implemented in the production of mini-vans by Toyota
- First introduced in the USA in 1984 by Dr. Clausing of Xerox
- QFD is a **planning tool** used to fulfill customer expectations or requirements
- A disciplined approach to product design, engineering, and production and provides in-depth evaluation of a product

Introduction

- QFD employed to translate customer expectations, in terms of specific requirements into directions and actions in terms of engineering / technical characteristics, that can be deployed through:
 - Product planning
 - Part development
 - Process planning
 - Production planning
 - Service industries
- Is a team-based management tool
- Conflicting characteristics are identified early and can be resolved before production

**Source: Besterfield et.al, 2003*

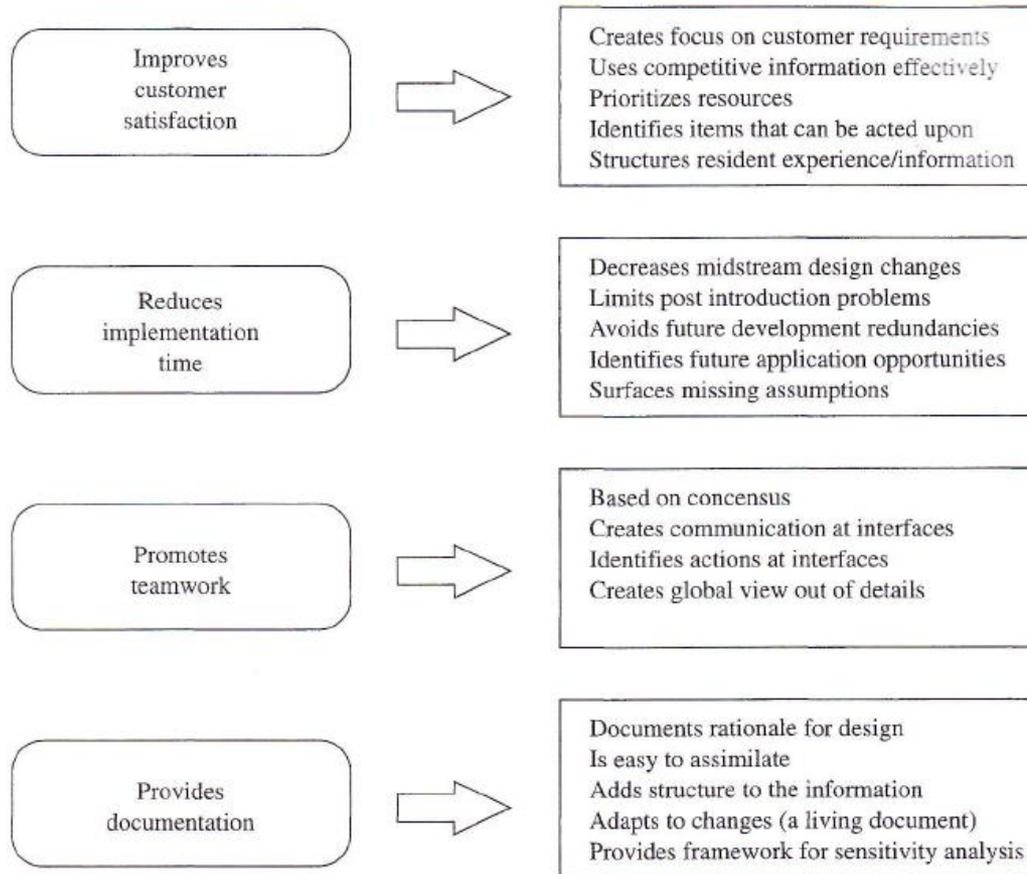
Introduction

- QFD helps identify new quality technology and job functions to carry out operations
- Tool provides a historic reference to enhance future technology and prevent design error
- A **set of graphically oriented planning matrices** that are used as the **basis for decisions affecting** any phase of the **product development cycle**
- Results are measured based on the number of design and engineering changes, time to market, cost and quality
- QFD often referred to as the voice of the customer

QFD Team

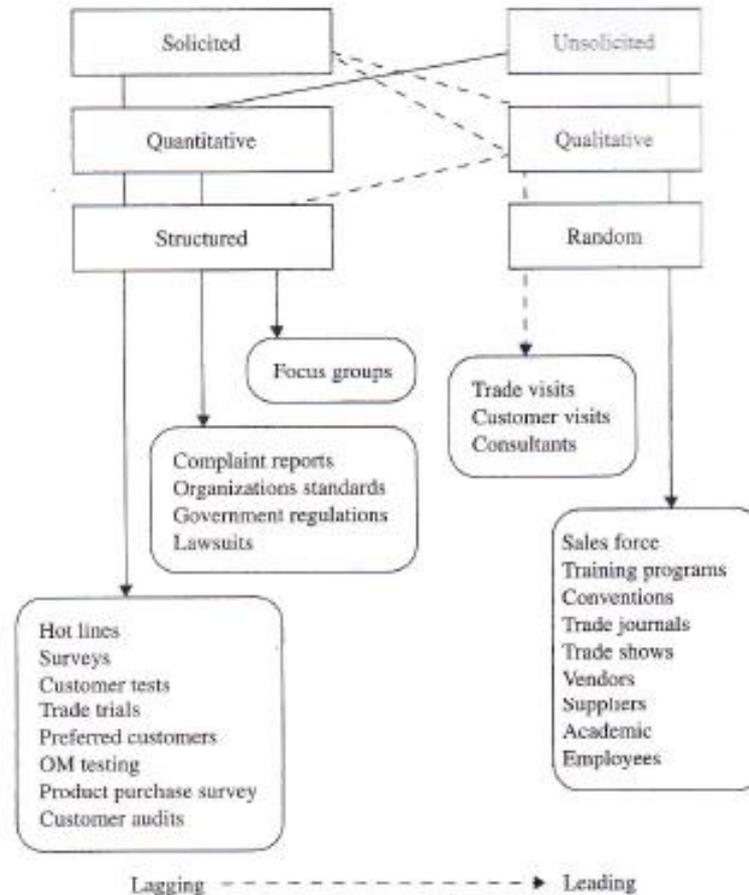
- Two types of teams - designing a new product or improving an existing product
- Teams are composed of members from marketing, design, quality, finance and production
- Each team must utilize time and inter-team communication
- Team meetings are very important in the QFD process – meeting format should have some way of measuring how well the QFD process is working
- Meeting will ensure that the right information is being entered into the QFD matrix

Benefits of QFD



*Source: Besterfield et.al, 2003

The Voice of the Customer

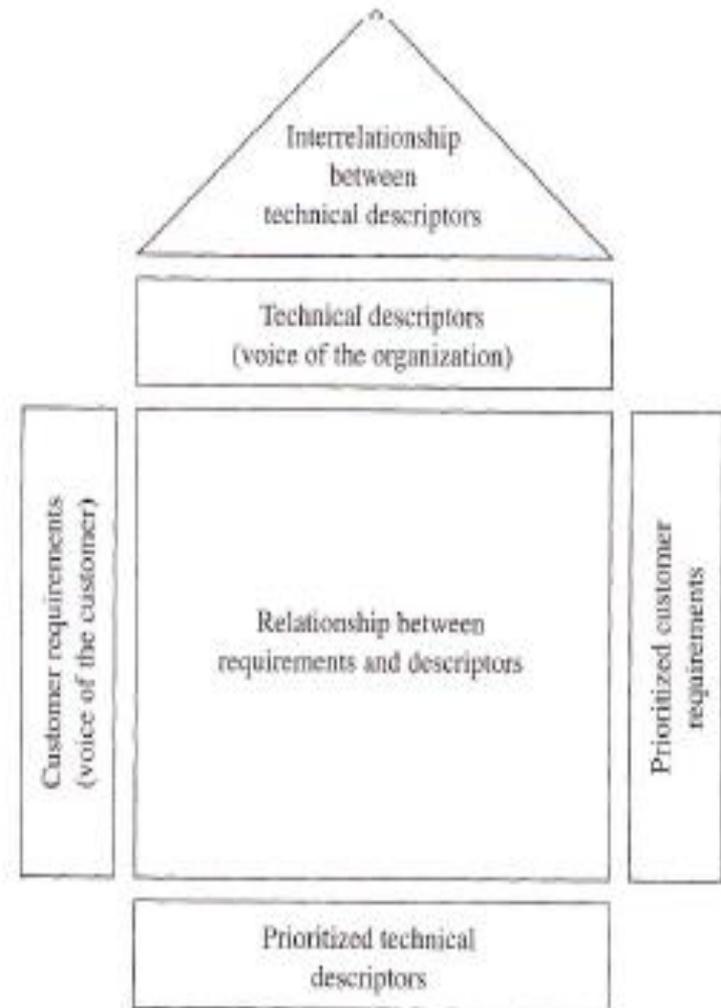


12-2 Types of Customer Information and How to Collect It

*Source: Besterfield et.al, 2003

House of Quality

- Is the primary planning tool used in QFD
- Translate the voice of customer into design requirements that meet specific target values and matches those against how an organization will meet those requirements
- Primary chart in quality planning



*Source: Besterfield et.al, 2003

House of Quality

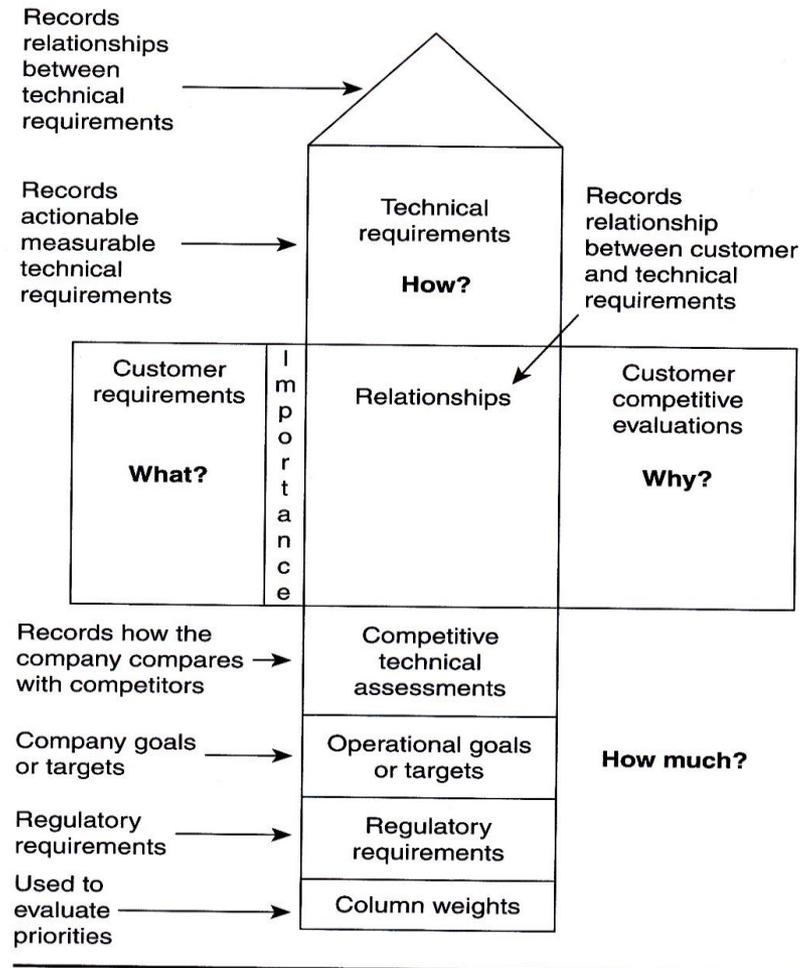


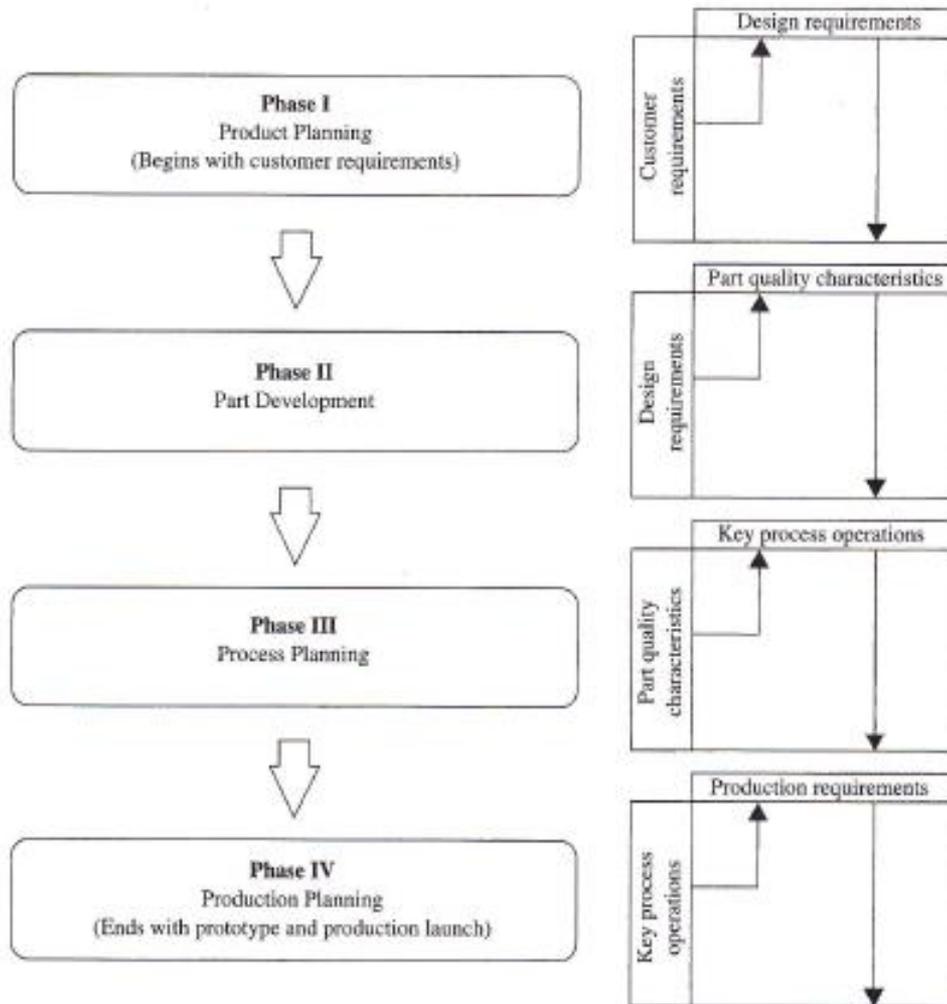
Figure 11.2 Summary of a QFD Matrix

*Source: Besterfield et.al, 2003

Building a House of Quality

1. List customer requirements (WHATs)
2. List Technical Descriptors (HOWs)
3. Develop a Relationship Matrix Between WHATs and HOWs
4. Develop an Interrelationship Matrix Between HOWs
5. Competitive Assessments (Customer and Technical)
6. Develop Prioritized Customer Requirements
7. Develop Prioritized Technical Descriptors

QFD Process



Often, more than one matrix will be needed, depending on the complexity of the project

The process is accomplished by creating a new chart in which the HOWs of the previous chart became the WHATs of the new chart

**Source: Besterfield et.al, 2003*

Summary

- An effective management tool in which customer expectations are used to drive the design process or to drive improvement in the service industries
- Some of the advantages of implementing QFD are:
 - An orderly way of obtaining information and presenting it
 - Shorter product development cycle
 - Considerably reduced start-up costs
 - Fewer engineering changes
 - Reduced chance of oversights during the design process
 - An environment of teamwork
 - Consensus decisions
 - Everything is preserved in writing

**Source: Besterfield et.al, 2003*