Lecture 3
Quality Management

Introduction

Introduction

What is quality?

Introduction

CUSTOMER SATISFACTION

Quantified Definition

Q = P / E

Q = Quality

P = Performance

E = Expectation

Introduction

Dimensions of Quality

- **Functionality –** core features and characteristics
- **Reliability –** durability
- **Usability –** user friendly
- **Maintainability –** ease with which a product can be maintained in original condition
- **Efficiency –** output to input ratio
- **Aesthetics –** attractive
- **Serviceability –** how well the customer is treated

Introduction

Consequences of Poor Quality

- Lower Productivity
- Loss of Productive time
- Loss of material
- Loss of business
- Liability

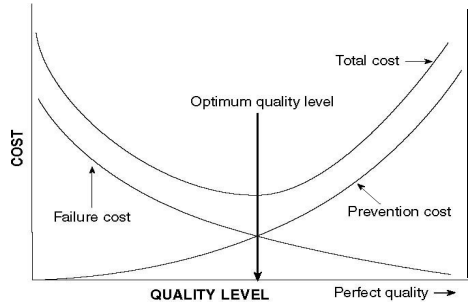
Introduction

Quality – Expensive???

- Prevention cost
- Appraisal cost
- Internal Failure cost
- External Failure cost

Introduction

Juran model of Quality Costs



Introduction

What is TQM?

TQM is a philosophy that makes quality values the driving force behind leadership, design, planning and improvements initiatives

It implies that *everyone* associated with the organization is committed towards *continual improvement* of the organization through *customer satisfaction*

TQM – A Road to success

Total Quality Management

Some Philosophies of TQM

Kaizen

Kaizen – Change for the better – refers to activities that continually (?) improve all functions and involve all employees

Basic Goals

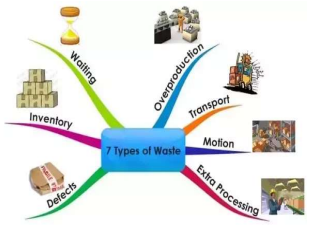
- Discover and Eliminate all Waste in a process
- Waste – anything that the customer does not pay for

  Some waste is necessary or required (personnel files, financial records, meetings, etc.)

Kaizen

Types of Waste

- Overproduction
- Waiting
- Over processing
- Inventory
- Motion
- Defects
- Transportation



PDCA Cycle

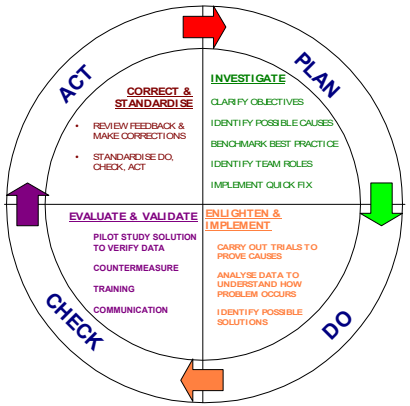
An iterative four-step management method used in business for the control and continuous improvement of processes and products

Also known as **Deming circle/cycle/wheel**, **Shewhart cycle**, **Control circle/cycle**

When to Use

- As a model for continual improvement
- When starting a new improvement project
- When developing a new or improved design of a process, product or service
- When defining a repetitive work process
- When planning data collection and analysis in order to verify and prioritize problems or root causes
- When implementing any change

PDCA Cycle



Quality Function Deployment (QFD)

A design planning process driven by customer

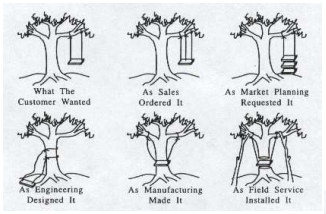
- QFD deploys the Voice of Customer (VOC) throughout the organization

Turning the customer's desires into engineering specifications

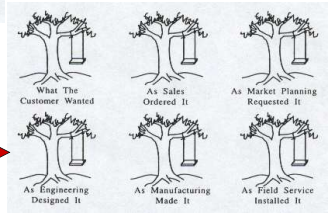
Benefits

- ✓ Customer Driven
- ✓ Reduces Implementation Time
- ✓ Promotes Teamwork
- ✓ Provides Documentation

Quality Function Deployment (QFD)



QFD Target



Quality Function Deployment (QFD)

Customer Requirement	Importance	Technical Requirements: Weight (∇)	Engine power (Δ)	Cost of Production (∇)	Expected Life (Δ)	Dimension (Δ)	Accel of Speed (Δ)	Competitor/Model: Us	Crossover	H2	Tahoe
Fast	3	⦿	⦿	○		○	⦿	4	1	1	2.5
MPG	2	⦿	⦿	⦿		○	○	1	2	1	2.5
Safe	4	○		○	⦿	○	●	5	4	5	5
Big	5	⦿	●	●	●	⦿	○	5	4	5	4
Reliable	3.5	●		⦿	⦿			3	3	3.5	4.5
Cheap	5	○	●	⦿	○	●	○	1	3	1.5	3
Importance		120.5	55	120.5	87.5	77	67				

Quality Function Deployment (QFD)

Customer Requirement	Importance	Technical Requirements						Competitor/Model			
		Weight	Engine power	Cost of Production	Expected Life	Dimension	Accel of Speed	Us	Crossover	H2	Tahoe
		∇	Δ	∇	Δ	Δ	Δ				
Fast	3	⦿	⦿	○		○	⦿	4	1	1	2.5
MPG	2	⦿	⦿	⦿		○	○	1	2	1	2.5
Safe	4	○		○	⦿	○	●	5	4	5	5
Big	5	⦿	●	●	●	⦿	○	5	4	5	4
Reliable	3.5	●		⦿	⦿			3	3	3.5	4.5
Cheap	5	○	●	⦿	○	●	○	1	3	1.5	3
Customer		120.5	55	120.5	87.5	77	67				
Us		111	51	77	80	76	62				
Crossover		87	34	91	76	60	40				
H2		86	24.5	77	86	67.5	36.5				
Tahoe		109.5	52	116.5	98.5	69	56				

Set your target