

## Quality Engineering and Management

### Lecture II

### Quality and the Changes in the "Business Culture"

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## Quality and the Changes in the "Business Culture"

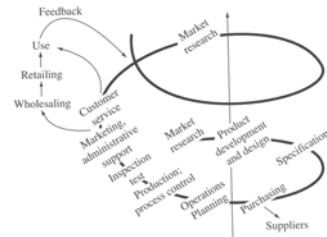
**Changes in the business culture have affected quality management philosophies**

## Quality and the Changes in the "Business Culture"

**The definitions of the "customer" has changed**

**Gryna - "anyone who is affected by the product or process"**

## The "quality function" [Spiral of progress in quality]



## Universal Process for Managing Quality

Quality planning	Quality control	Quality improvement
Establish the project	Choose control subjects	Prove the need
Identify customers	Establish measurement	Identify projects
Discover customer needs	Establish standards of performance	Organize project teams
Develop product	Measure actual performance	Diagnose the causes
Develop process	Compare to standards	Provide remedies, prove that the remedies are effective
Develop process controls, transfer to operations	Take action on the difference	Deal with resistance to change
		Control to hold the gains

## Contributions of Various Disciplines

Discipline	Example of contribution
Finance	Measuring the cost of poor quality
Industrial engineering	Design of integrated systems, measurement, problem solving, work analysis
Information technology	Measurement, analysis, and reporting on quality
Marketing research	Competitive standing on quality; understand customer desires
Operations management	Management of integrated systems
Operations research	Analyzing product design alternatives for optimization
Organizational behavior	Understanding quality culture; making teams effective
Organizational effectiveness	Satisfying the needs of both internal and external customers
Strategic planning	Quality as a means of achieving a unique competitive advantage
Systems engineering	Translating customer needs into product features and process features
Value engineering	Analysis of essential functions needed by customer

## **Quality and the Changes in the "Business Culture"**

**Global competition has changed the way companies must operate**

**Logistics have become important part of quality equation**

- **Delivery schedules are as important as production schedules**
- **Requires adjustment by both labor and management**

## **Quality and the Changes in the "Business Culture"**

**Global competition has changed the way companies must operate**

**Need to not only meet, but exceed, customer expectations**

## **Quality and the Changes in the "Business Culture"**

**Global competition has changed the way companies must operate**

- **customer expectations have increased**
- **quality can "trump" price**
- **both for "end consumers" and "customer companies" in the supply chain**

## **Quality and the Changes in the "Business Culture"**

**"Participative" management**

**"Quality circles" originated in Japan**

**Requires different level of training (both formal and job-related)**

## **Quality and the Changes in the "Business Culture"**

**Just-in-time (JIT) production depends on**

**quality products  
and  
quality logistics**

## **Quality and the Changes in the "Business Culture"**

**Just-in-time production depends on quality products and quality logistics**

**Relationship between inventory and quality**

**Focus on inventory = focus on quality**

## **Quality and the Changes in the "Business Culture"**

### **Focus on the customer's expectations**

**Changed by Japanese automobiles**

**Electronics industry**

**Change from warrantee service orientation to "no need for warrantee service"**

## **Quality and the Changes in the "Business Culture"**

**View  
"internal customers"  
differently**

**[supply chain orientation]**

## **Quality and the Changes in the "Business Culture"**

**"Globalization" has changed the quality management landscape**

**Competition**

**Large labor rate differentials**

**Logistics (i.e., transportation issues)**

## **Quality and the Changes in the "Business Culture"**

**Relationship of  
quality, productivity, costs and value  
in a lean production system**

**Traditional view - trade-off  
Modern view - dependency**

**- Lean manufacturing  
- waist reduction and quality**

## **Quality and the Changes in the "Business Culture"**

**Relationship of quality, productivity, costs and value in a lean system**

**Basic concept of "lean manufacturing"**

**Reduce "waste"**

**Poor quality is the ultimate waste  
(time, material, profits)**

## **Current Trends in Quality**

**International standards for quality (ISO)**

**ISO 9000 is a series of standards certifications  
9000:2000  
9001:2000  
etc.**

**that address different parts of the quality system**

## **Current Trends in Quality**

### **International standards for quality (ISO)**

**Provides an "international reference" for quality management systems**

## **Current Trends in Quality**

### **International standards for quality (ISO)**

**ISO 14000 is a series of quality certifications 14000, 14020, 1462, etc.**

**That address environmental management systems**

## **Current Trends in Quality**

### **Quality Awards**

#### **Malcolm Baldrige National Quality Award**

**Congress established the award to raise awareness about quality management and to recognize U.S. companies that have successful quality management systems**

## **Current Trends in Quality**

### **Quality Awards**

#### **Deming Prize**

**created by the Union of Japanese Scientists and Engineers (JUSE) in 1950**

**To recognize Japanese individuals and companies**

## **Current Trends in Quality**

### **Quality Awards**

#### **Deming Prize**

**The Deming Prize, especially the Deming Application Prize which is given to companies, has exerted an immeasurable influence directly or indirectly on the development of quality control and management in Japan.**

## **Current Trends in Quality**

### **Quality Awards**

#### **Ishikawa Medal**

**Established by the American Society for Quality (ASQ, previously ASQC)**

**Specifically addresses the "human aspect of quality"**

## Current Trends in Quality

### Quality Awards

#### Ishikawa Medal

The Ishikawa Medal is awarded to an individual or a team whose work has had a major positive impact on the human aspects of quality.

## Production Programs Related to Quality

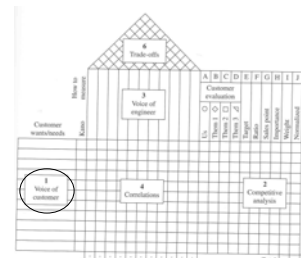
### Quality function deployment (QFD)

#### Product design process

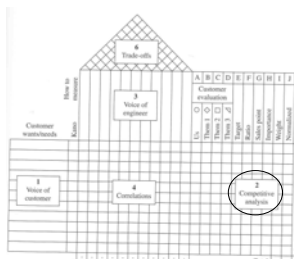
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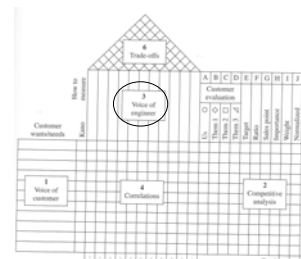
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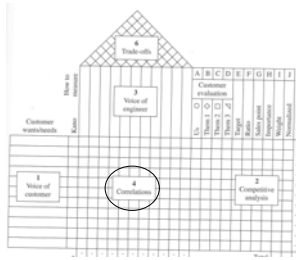
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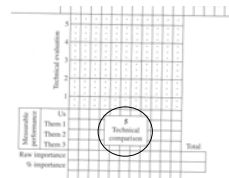
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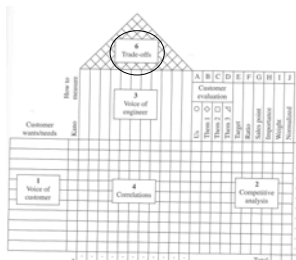
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## Production Programs Related to Quality

### Six-sigma programs

#### Individual certification programs

Focuses on process capability, variation, and  
“design for six-sigma”

[Discussed in detail later in the course]

## Production Programs Related to Quality

### Lean production

Focus on “reducing waist”

Quality issues are a primary source of “waist”

[Discussed in detail later in the course]

## Production Programs Related to Quality

### Necessities for Operators

Know what is “right”

Have ways (tools and knowledge) to determine if  
it is “right”

Be able (have both responsibility and authority)  
to change things to make it “right”