



**Al- Mustaqbal University College**

**Chem. Eng. Petr. Ind. Dept.**

**4<sup>th</sup> stage**

## **Industrial Management and Ethics**

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**Lecture 10**

**Part 2**

**Quality Management**

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## Quality and Strategy

As Arnold Palmer Hospital and many other organizations have found, quality is a wonderful tonic for improving operations. Managing quality helps build successful strategies of differentiation, low cost, and response.

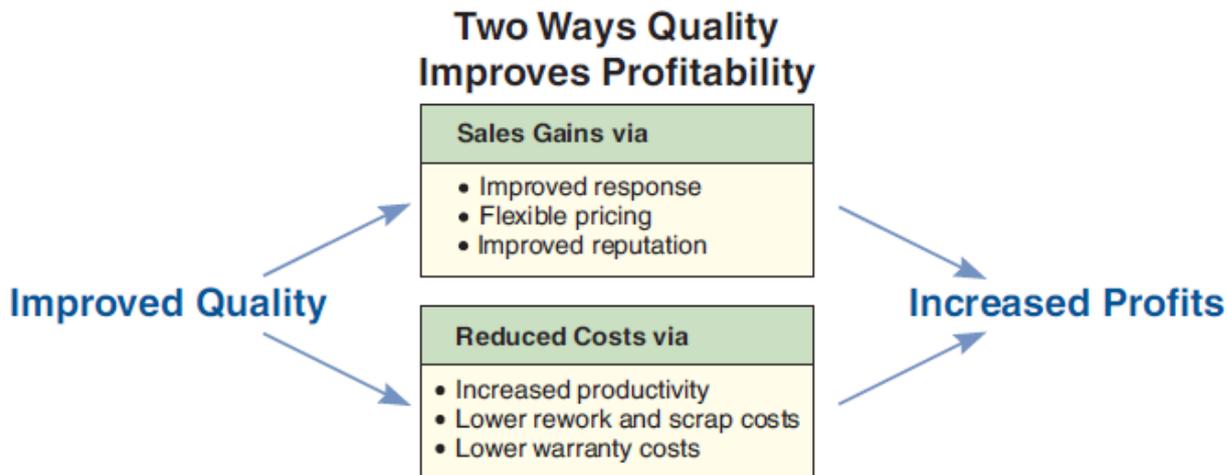


Fig. 1 Ways Quality Improves Profitability

As Figure 1 suggests, improvements in quality help firms increase sales and reduce costs, both of which can increase profitability. Increases in sales often occur as firms speed response, increase or lower selling prices, and improve their reputation for quality products. Similarly, improved quality allows costs to drop as firms increase productivity and lower rework, scrap, and warranty costs.

### ISO 9000 International Quality Standards

The move toward global supply chains has placed so much emphasis on quality that the world has united around a single quality standard, **ISO 9000**. ISO 9000 is *the* quality standard with international recognition. Its focus is to enhance success through eight quality management principles: (1) top management leadership, (2) customer satisfaction, (3) continual improvement, (4) involvement of people, (5) process analysis, (6) use of data-driven decision making, (7) a systems approach to management, and (8) mutually beneficial supplier relationships.

## Cost of Quality (COQ)

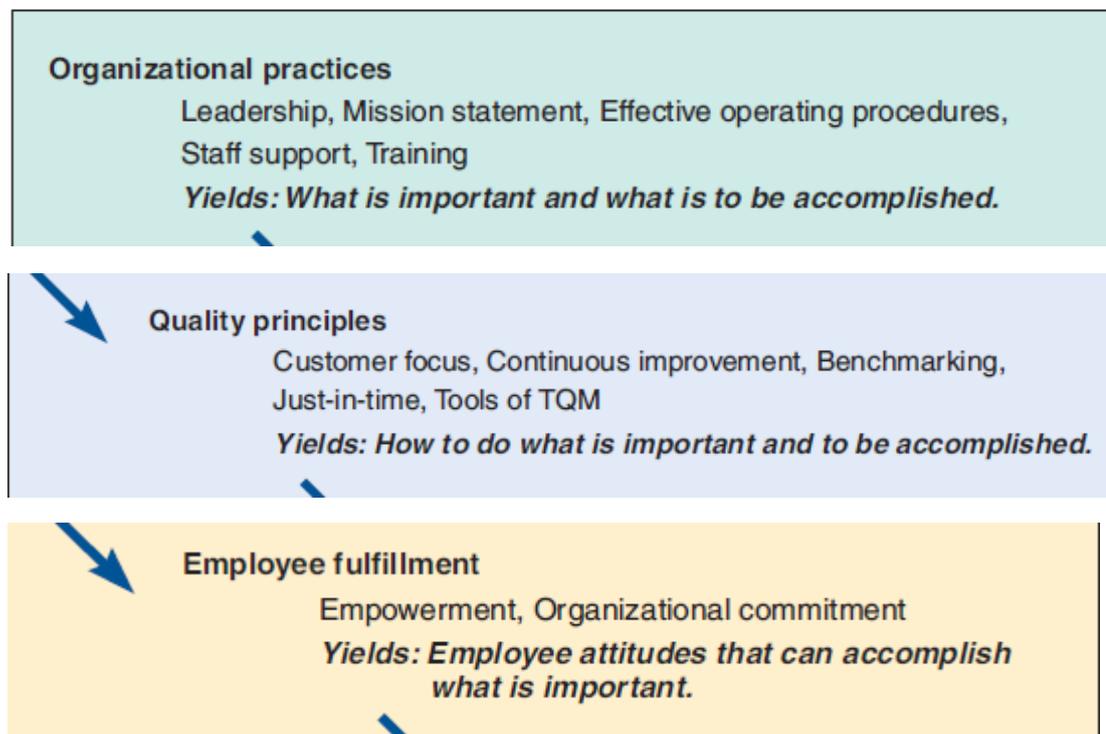
Four major categories of costs are associated with quality. Called the **cost of quality (COQ)**, they are:

- ◆ *Prevention costs*: costs associated with reducing the potential for defective parts or services (e.g., training, quality improvement programs).
- ◆ *Appraisal costs*: costs related to evaluating products, processes, parts, and services (e.g., testing, labs, inspectors).
- ◆ *Internal failure costs*: costs that result from production of defective parts or services before delivery to customers (e.g., rework, scrap, downtime).
- ◆ *External failure costs*: costs that occur after delivery of defective parts or services (e.g., rework, returned goods, liabilities, lost goodwill, costs to society).

## Total quality management (TQM)

Management of an entire organization so that it excels in all aspects of products and services that are important to the customer.

Figure 2 lays out the flow of activities for an organization to use to achieve total quality management (TQM).



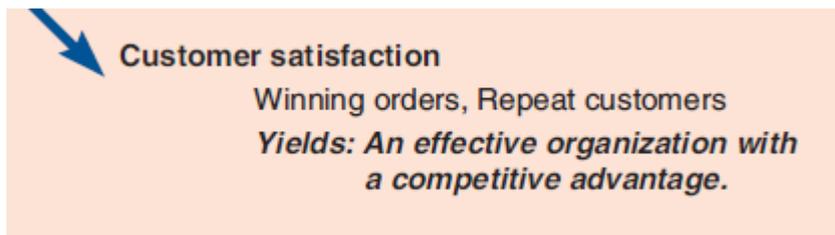


Figure 6.2

The Flow of Activities Necessary to Achieve Total Quality Management

## Deming's 14 Points for Implementing Quality Improvement

Quality expert W. Edwards Deming used 14 points to indicate how he implemented TQM:

1. Management must create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of an overhaul, as well as supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company.

9. Break down barriers between departments. People in research, design, sales and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.
10. Eliminate slogans, exhortations and targets for the workforce asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the workforce.
11. Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.
12. Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, among other things, abolishment of the annual or merit rating and of management by objective.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

We develop these into seven concepts for an effective TQM program:

- (1) continuous improvement, (2) Six Sigma, (3) employee empowerment, (4) benchmarking,
- (5) just-in-time (JIT), (6) Taguchi concepts, and (7) knowledge of TQM tools.

### Continuous Improvement

Total quality management requires a never-ending process of continuous improvement that covers people, equipment, suppliers, materials, and procedures. The basis of the philosophy is that every aspect of an operation can be improved. The end goal is perfection, which is never achieved but always sought.

**Plan-Do-Check-Act** Walter Shewhart, another pioneer in quality management, developed a circular model known as **PDCA** (plan, do, check, act) as his version of continuous improvement. Deming later took this concept to Japan during his work there after World War II. The PDCA cycle (also called a Deming circle or a Shewhart circle) as a circle to stress the continuous nature of the improvement process.

