

Quality Management

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Lecture 9





Quality

Quality

Quality means “Performance upon expectations” and “fit for functions.”

A product is said to be of good quality if it satisfies the customer's requirements in terms of performance, grade, durability, appearance, and intended use/purpose, etc.

Customers will often pay premium prices for superior quality.



Quality Management

The ability of a product or service to consistently meet or exceed customer expectations

- For a decade or so, quality was an important focal point in business. After a while, this emphasis began to fade as other concerns took precedence
- There has been a recent resurgence in attention to quality given recent experiences with the costs and adverse attention associated with highly visible quality failures:
 - Auto recalls
 - Toys
 - Produce
 - Dog food
 - Pharmaceuticals



Dimensions of Product Quality

- **Performance** – main characteristics of the product
- **Aesthetics** – appearance, feel, smell, taste
- **Special** features – extra characteristics
- **Conformance** – how well the product conforms to design specifications
- **Reliability** – consistency of performance
- **Durability** – the useful life of the product
- **Perceived quality** – indirect evaluation of quality
- **Serviceability** – handling of complaints or repairs
- **Consistency** – quality doesn't vary

Dimensions of Service Quality

- **Convenience** – the availability and accessibility of the service
- **Reliability** – ability to perform a service dependably, consistently, and accurately
- **Responsiveness** – willingness to help customers in unusual situations and to deal with problems
- **Time** – the speed with which the service is delivered
- **Assurance** – knowledge exhibited by personnel and their ability to convey trust and confidence
- **Courtesy** – the way customers are treated by employees
- **Tangibles** – the physical appearance of facilities, equipment, personnel, and communication materials
- **Consistency** – the ability to provide the same level of good quality repeatedly
- **Expectancy** – meet (or exceed) customer expectations

Assessing Service Quality

- Audit service to identify strengths and weaknesses
- delivered for discrepancies between:
 1. Customer expectations and management perceptions of those expectations
 2. Management perceptions, customer expectations, and service-quality specifications
 3. Service quality and service delivered
 4. Service delivered and what is communicated about the service to customers
 5. Customers' expectations of the service provider and their perceptions of provider delivery

Determinants of Quality

- **Quality of design**
 - Intention of designers to include or exclude features in a product or service
- **Quality of conformance**
 - The degree to which goods or services conform to the intent of the designers
- **Ease-of-use and user instructions**
 - Increase the likelihood that a product will be used for its intended purpose and in such a way that it will continue to function properly and safely
- **After-the-sale service**
 - Taking care of issues and problems that arise after the sale

Responsibility for Quality

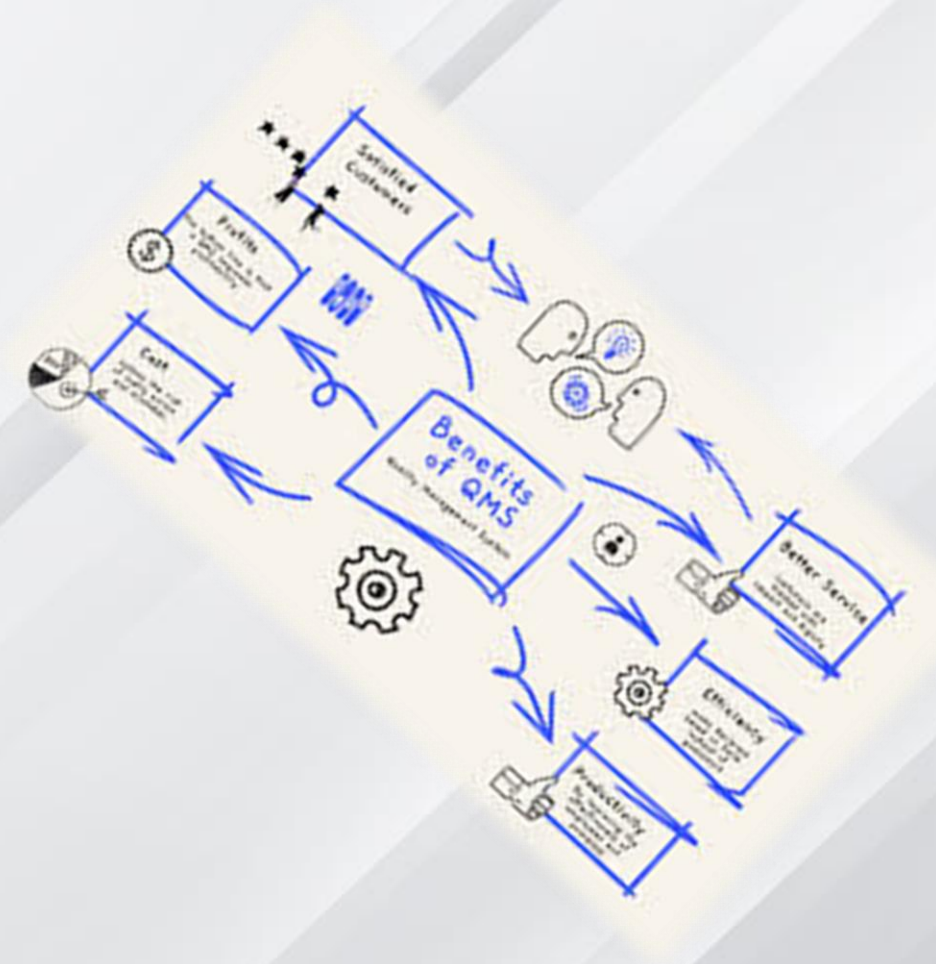
- Top management
- Design
- Procurement
- Production/operations
- Quality assurance
- Packaging and shipping
- Marketing and sales
- Customer service

Everyone in the organization has some responsibility for quality, but certain areas of the organization are involved in activities that make them key areas of responsibility



Benefits of Good Quality

- Enhanced reputation for quality
- Ability to command premium prices
- Increased market share
- Greater customer loyalty
- Lower liability costs
- Fewer production or service problems
- Lower production costs
- Higher profits



The Consequences of Poor Quality

- Loss of business
- Liability
- Productivity
- Costs



Costs of Quality

- **Appraisal costs**

- Costs of activities designed to ensure quality or uncover defects

- **Prevention costs**

- All TQ training, TQ planning, customer assessment, process control, and quality improvement costs to prevent defects from occurring

Costs of Quality (cont.)

- **Failure costs** - costs incurred by defective parts/products or faulty services
 - **Internal failure costs**
 - Costs incurred to fix problems that are detected before the product/service is delivered to the customer
 - **External failure costs**
 - All costs incurred to fix problems that are detected after the product/service is delivered to the customer

Ethics and Quality

- **Substandard work**

- Defective products
- Substandard service
- Poor designs
- Shoddy workmanship
- Substandard parts and materials



Having knowledge of this and failing to correct and report it in a timely manner is unethical.

The Baldrige Competition

The Malcolm Baldrige National Quality Award® is the highest level of national recognition that a U.S. organization can receive for performance excellence, particularly in relation to resilience and long-term success.

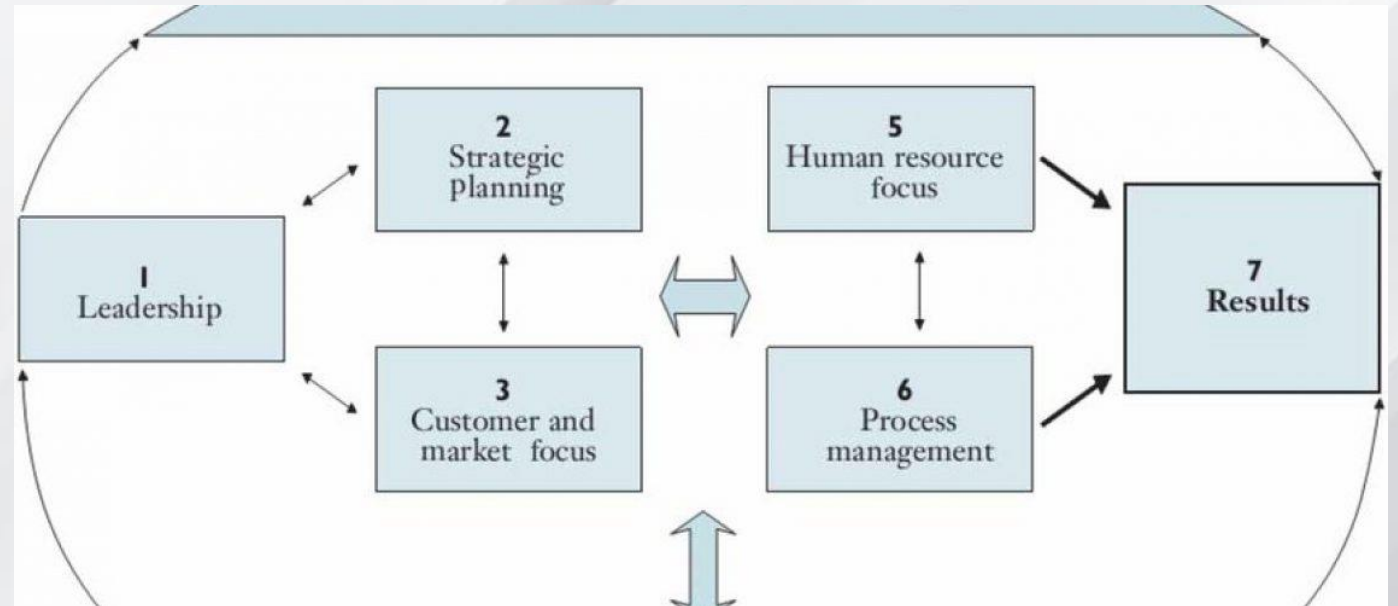


The Baldrige Competition

- Award categories
 1. Education
 2. Healthcare
 3. Manufacturing
 4. Nonprofit/government
 5. Service
 6. Small Business
- Purpose of the award
 1. Stimulate efforts to improve quality
 2. Recognize quality achievements
 3. Publicize successful programs

Baldrige Criteria

1. Leadership
2. Strategic planning
3. Customer focus
4. Measurement, analysis, and knowledge management
5. Workforce focus
6. Operations focus
7. Results



Quality Certification

International Organization for Standardization

- ISO 9000
 - Set of international standards on quality management and quality assurance, critical to international business
- ISO 14000
 - A set of international standards for assessing a company's environmental performance
- ISO 24700
 - Pertains to the quality and performance of office equipment that contains reused components

Quality Certification (cont.)

- **ISO 9000**

- Quality principles

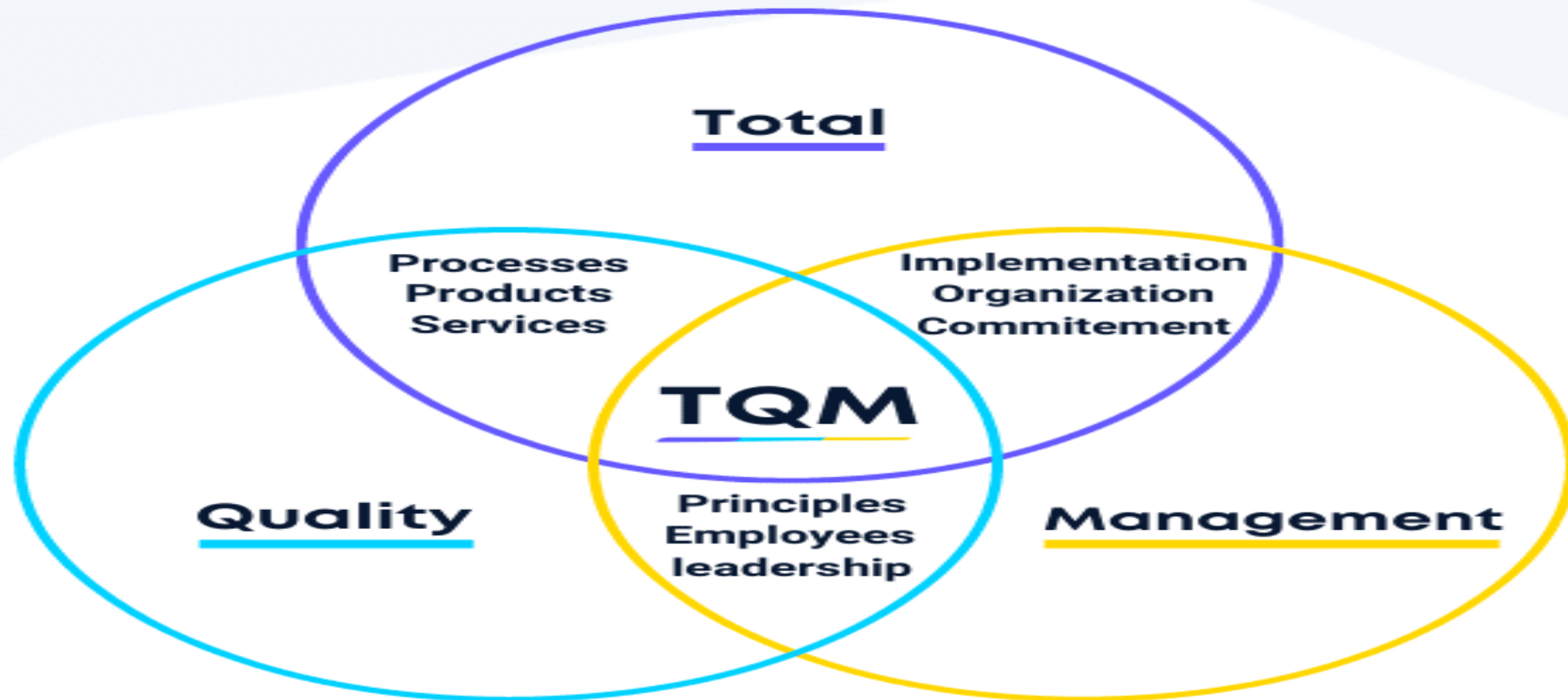
- Principle 1 Customer focus
 - Principle 2 Leadership
 - Principle 3 Involvement of people
 - Principle 4 Process approach
 - Principle 5 System approach to management
 - Principle 6 Continual improvement
 - Principle 7 Factual approach to decision making
 - Principle 8 Mutually beneficial supplier relationships

Quality and the Supply Chain

- Business leaders are increasingly recognizing the importance of their supply chains in achieving their quality goals
 - Requires:
 - Measuring customer perceptions of quality
 - Identifying problem areas
 - Correcting these problems
 - Supply chain quality management can benefit from a collaborative relationship with suppliers
 - Helping suppliers with quality assurance efforts
 - Information sharing on quality-related matters

Total Quality Management

- A philosophy that involves everyone in an organization in a continual effort to improve quality and achieve customer satisfaction



TQM Approach

1. Find out what the customer wants
2. Design a product or service that meets or exceeds customer wants
3. Design processes that facilitate doing the job right the first time
4. Keep track of results
5. Extend these concepts throughout the supply chain
6. Top management must be involved and committed

TQM Elements

1. Continuous improvement
2. Competitive benchmarking
3. Employee empowerment
4. Team approach
5. Decision based on fact, not opinion
6. Knowledge of tools
7. Supplier quality
8. Champion
9. Quality at the source
10. Suppliers are partners in the process

Continuous Improvement

- **Continuous improvement**
 - Philosophy that seeks to make never-ending improvements to the process of converting inputs into outputs
- **Kaizen**
 - Japanese word for continuous improvement

ISO guidelines stress continuous improvement

Quality at the Source

The philosophy of making each worker responsible for the quality of his or her work

- “Do it right” and “If it isn’t right, fix it”



Obstacles to Implementing TQM

- Lack of company-wide definition of quality
- Lack of strategic plan for change
- Lack of customer focus
- Poor intra-organizational communication
- Lack of employee empowerment
- View of quality as a “quick fix”
- Emphasis on short-term financial results
- Inordinate presence of internal politics and “turf” issues
- Lack of strong motivation
- Lack of time to devote to quality initiatives
- Lack of leadership

Criticisms of TQM

- Obsessive promoters may pursue TQM programs blindly, focusing attention on quality
- Programs may not be linked to the strategies of the organization in a meaningful way
- Quality-related decisions may not be tied to market performance
- Failure to carefully plan a program before embarking on it can lead to false starts, employee confusion, and meaningless results
- Organizations sometimes pursue continuous improvement
- Quality efforts may not be tied to results

PDSA Cycle



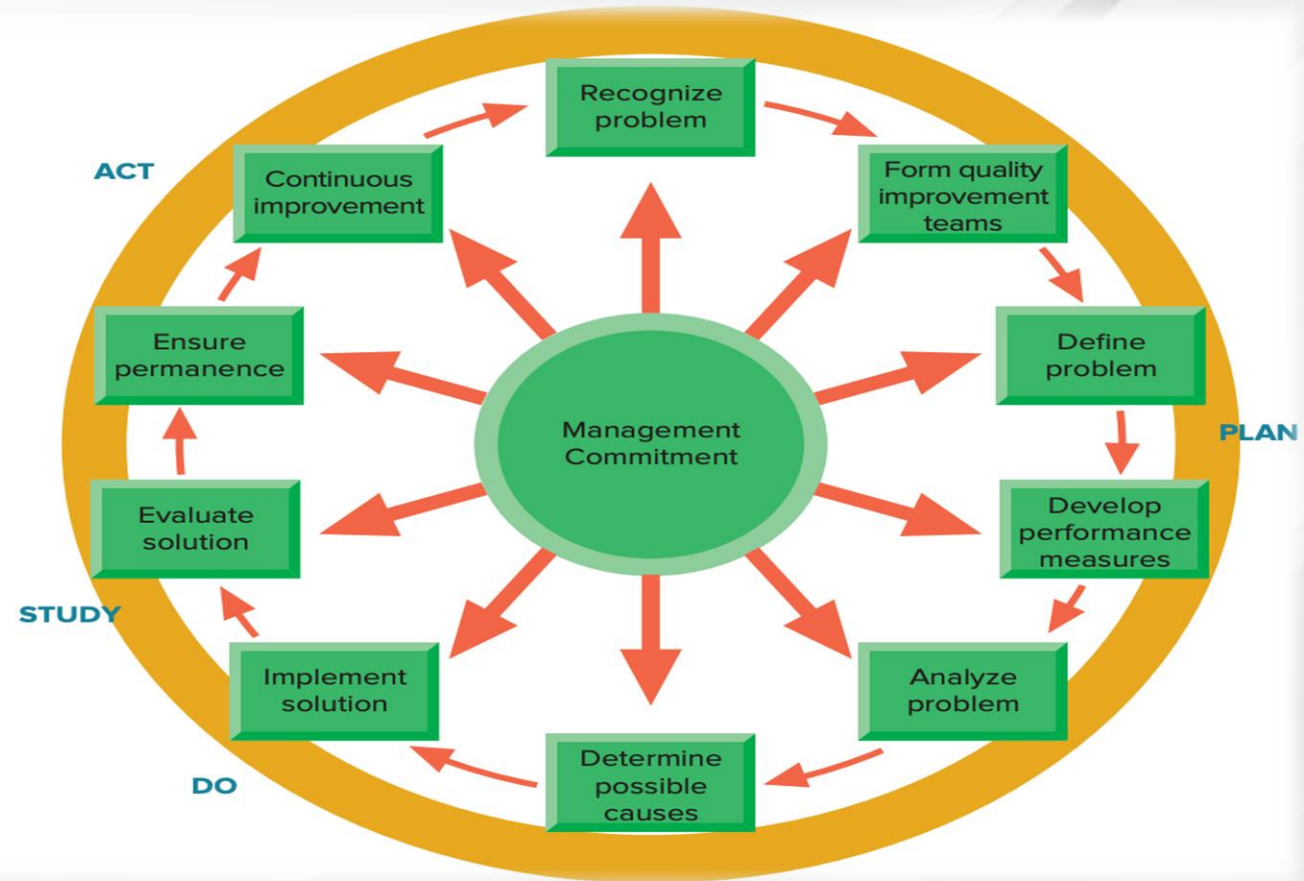
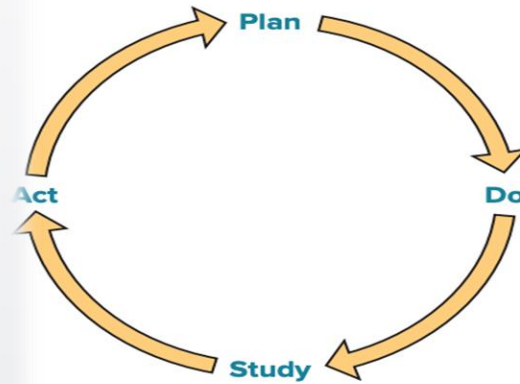
- Plan-Do-Study-Act (PDSA) cycle
 - **Plan**
 - Begin by studying and documenting the current process.
 - Collect data on the process or problem
 - Analyze the data and develop a plan for improvement
 - Specify measures for evaluating the plan
 - **Do**
 - Implement the plan, document any changes made, collect data for analysis

PDSA Cycle(cont.)



- Plan-Do-Study-Act (PDSA) cycle
 - **Study**
 - Evaluate the data collection during the do phase
 - Check results against goals formulated during the plan phase
 - **Act**
 - If the results are successful, standardize the new method and communicate it to the relevant personnel
 - Implement training for the new method
 - If unsuccessful, revise the plan and repeat the process

Problem Solving



Process Improvement

- **Process improvement**
 - A systematic approach to improving a process
 - Map the process
 - Collect information about the process and identify each step in the process
 - Prepare a flowchart that accurately depicts the process
 - Analyze the process
 - Ask critical questions about the process
 - Ask specific questions about each step in the process
 - Redesign the process

Six Sigma

- **Six Sigma**
 - A business process for improving quality, reducing costs, and increasing customer satisfaction
 - **Statistically**
 - Having no more than 3.4 defects per million
 - **Conceptually**
 - Program designed to reduce defects
 - Requires the use of certain tools and techniques

Six Sigma (cont.)

- **Principles**

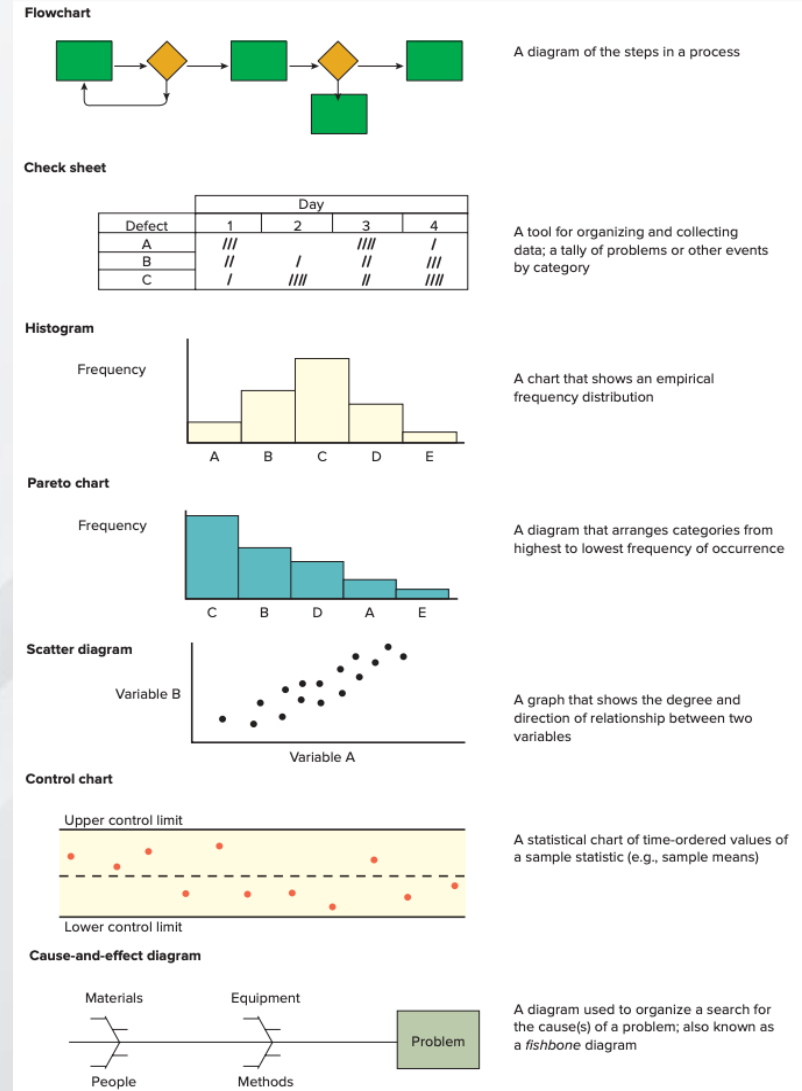
- Reduction in variation is an important goal
- The methodology is data driven; it requires data validation
- Outputs are determined by inputs
- Only a critical few inputs have a significant impact on outputs

- **DMAIC**

- Define: Set the context and objectives for improvement
- Measure: Determine the baseline performance and capability of the process
- Analyze: Use data and tools to understand the cause-and-effect relationships of the process
- Improve: Develop the modifications that lead to a validated improvement of the process
- Control: Establish plans and procedures to ensure that improvements are sustained

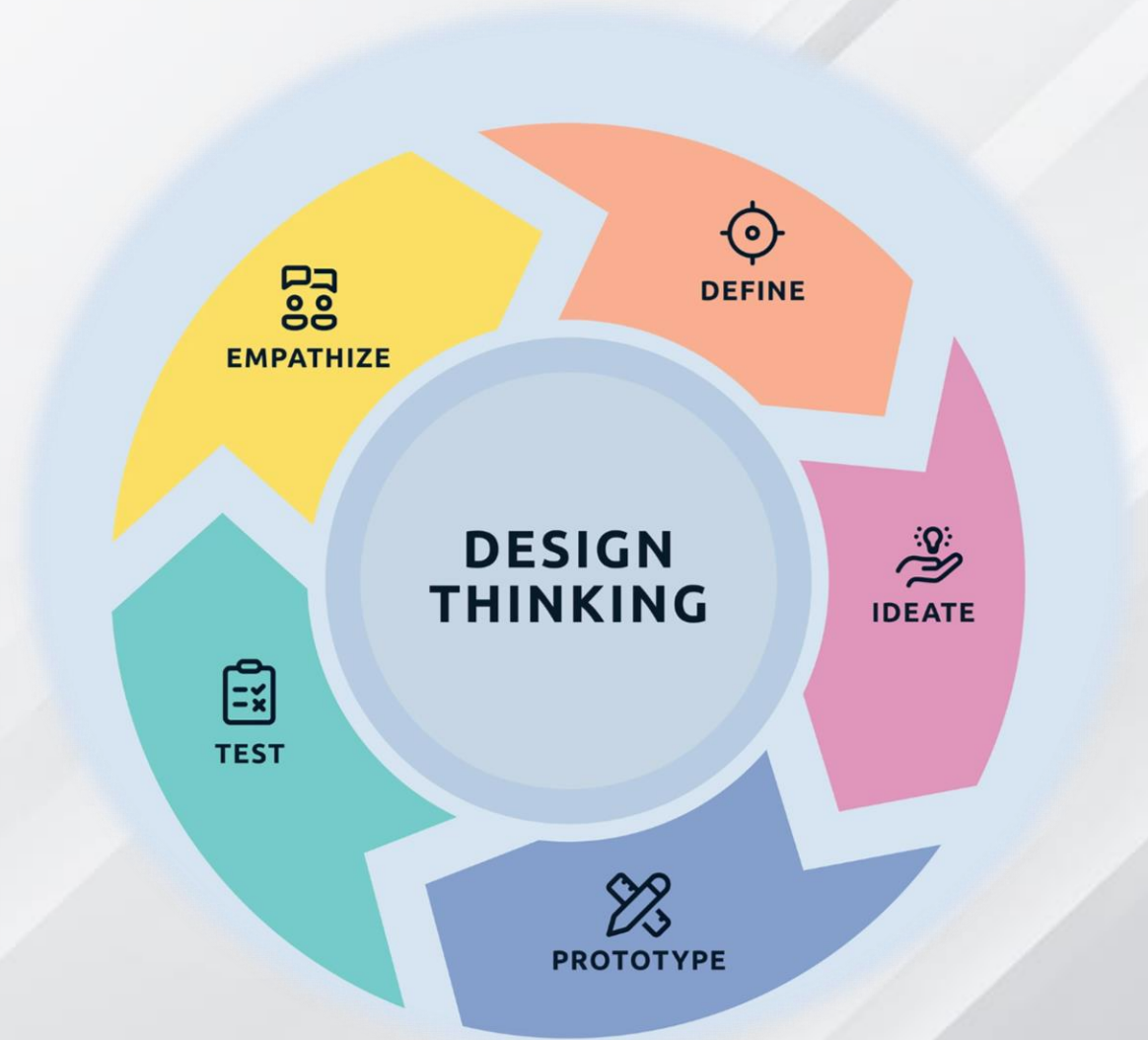
Basic Quality Tools

- Flowchart
- Check sheet
- Histogram
- Pareto chart
- Scatter diagram
- Control chart
- Cause-and-effect diagram



Methods for Generating Ideas

- Brainstorming
- Quality circles
- Benchmarking



Quality Circles

- **Quality circle**

- Groups of workers who meet to discuss ways of improving products or processes
- Less structured and more informal than teams involved in continuous improvement
- Quality circle teams have historically had relatively little authority to make any but the most minor changes

Benchmarking Process

1. Identify a critical process that needs improvement
2. Identify an organization that excels in this process
3. Contact that organization
4. Analyze the data
5. Improve the critical process



What Is Benchmarking?

Benchmarking is a process where you measure your company's success against competitors to discover how to improve your performance.

Operations Strategy

- Quality is a strategic imperative for organizations
 - Customers are very concerned with the quality of goods and services they receive
- Quality is a never-ending journey
 - It is important that most organizational members understand and buy into this idea
- Customer satisfaction $\neq$ customer loyalty
- Quality needs to be incorporated throughout the entire supply chain, not just the organization itself



Thank You