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Learning Unit 1: Principle of Total Quality Management

MODULE 5: Quality Control



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Quality Control

Training Unit 1: Principles of Total Quality Management

1.1: Evolution of the concept of quality from the second half of the twentieth century

1.2: The quality according to the Japanese model

1.3: The philosophy of Total Quality Management

1.3.1. Towards excellence: the 8 principles of Total Quality Management

1.4 Quality as a tool for achieving competitive advantages

AFTER COMPLETION OF THIS UNIT, YOU WILL KNOW OR YOU WILL CAPABLE TO DO

Knowledge	Skill	Competence
<ul style="list-style-type: none">• TQM Principles• Individuation of total quality improvement tools• Identification of many technical standards	<ul style="list-style-type: none">• Good reading comprehension skills with the topic of Quality control.• Flexible attitude towards changing circumstances (sectoral, design, production, innovation, history etc.)• Problem identification, creative search for solutions (both well-known ones and new ones), ability to follow logical inferences and elaborate formal reasoning	<ul style="list-style-type: none">• Identification of requirements for specific materials, products and processes• Definition of best practices to be implemented for quality products and processes• Capacity to develop of a master plan of standards for quality and safety of products



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1.1: Evolution of the concept of quality from the second half of the twentieth century

Training Unit 1: Principles of Total Quality Management



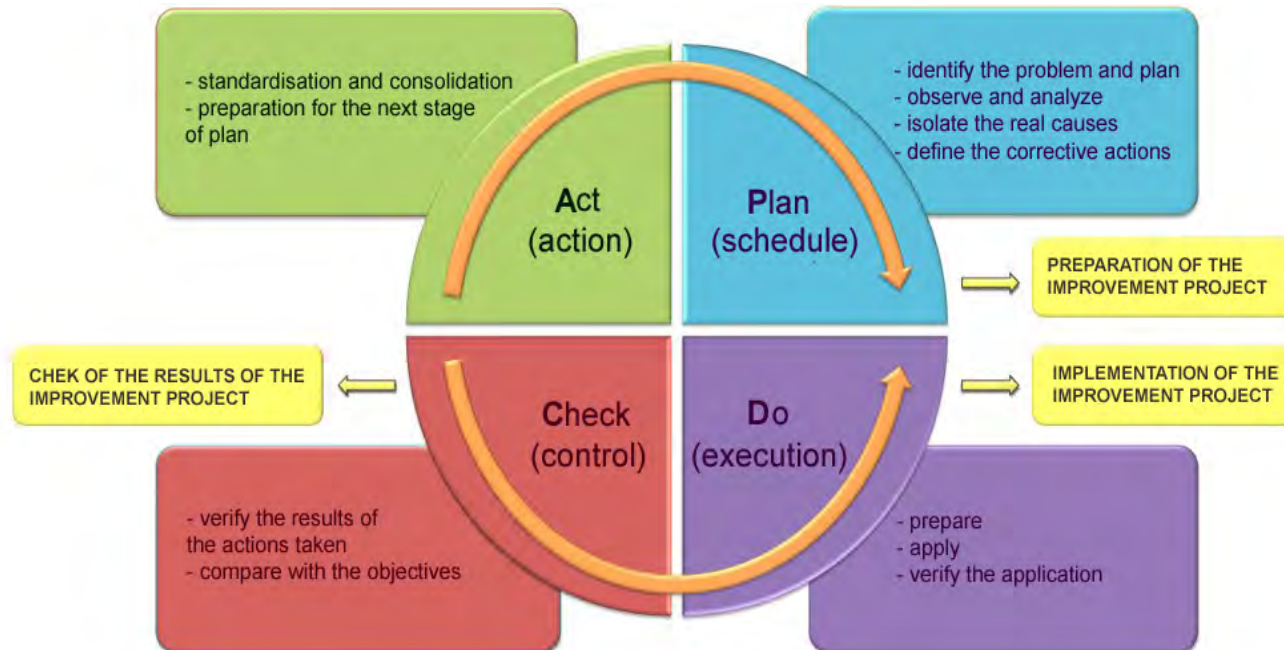
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TOPICS 1.

1. Evolution of the concept
2. Deming Wheel. PDCA cycle
3. The Japanese Model
4. Total Quality Management Model

- The concept of quality has existed for many years, though its meaning has changed and evolved over time
- In the early twentieth century, quality management meant inspecting products to ensure that they met specifications
- In the 1940s, during World War II, quality became more statistical in nature
- Statistical sampling techniques were used to evaluate quality, quality control charts were used to monitor the production process.
- In the 1960s, with the help of so-called “quality gurus”, the concept took on a broader meaning.
- Quality began to be viewed as something that encompassed the entire organizations, not only production process

PDCA Cycle





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1.2: The quality according to the Japanese model

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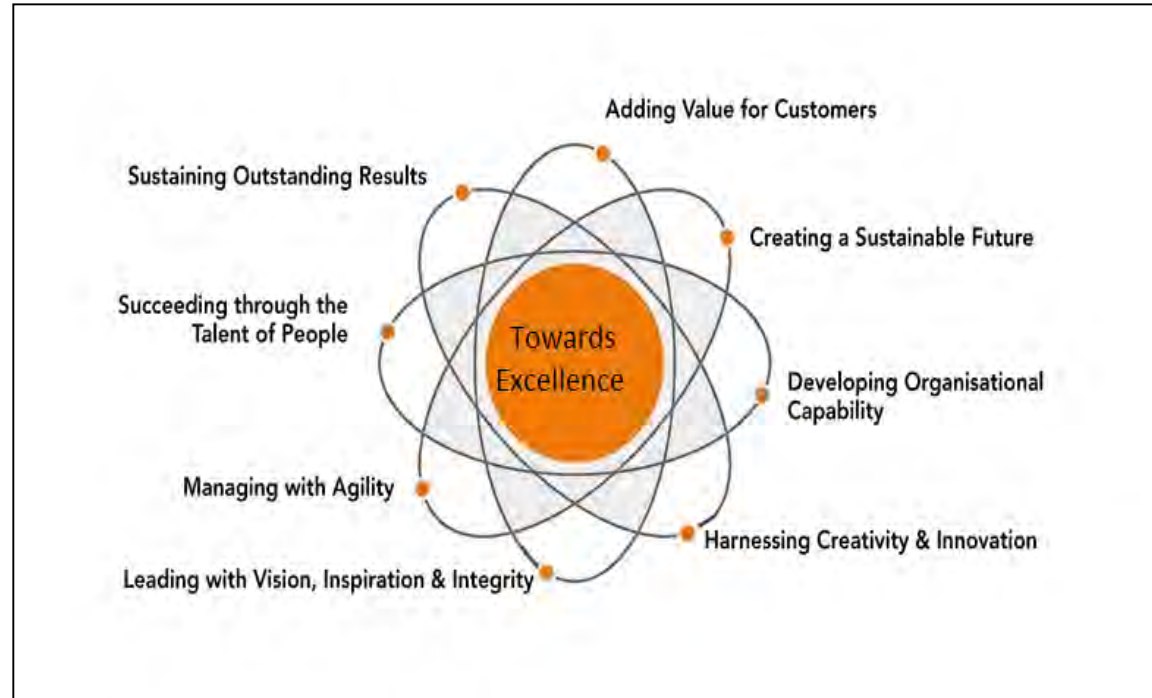
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Company Wide Quality control

A Circle of Quality is
«A small group of people»,
preferably coming from the same sector
having similar activities
which regularly periodically meets
to identify problems
analyse
find solutions
and propose them.

The concept of excellence

“Excellent organizations continuously create value for customers and at the same time improve the economic, environmental and social conditions in the community they are in contact with.”





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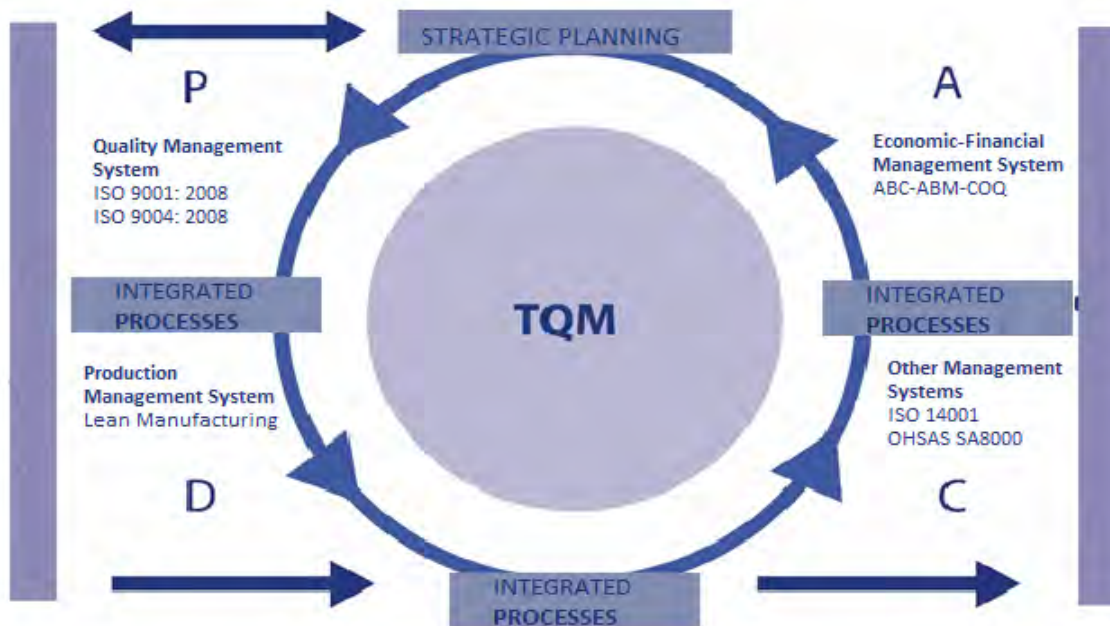
1.3: The philosophy of Total Quality Management

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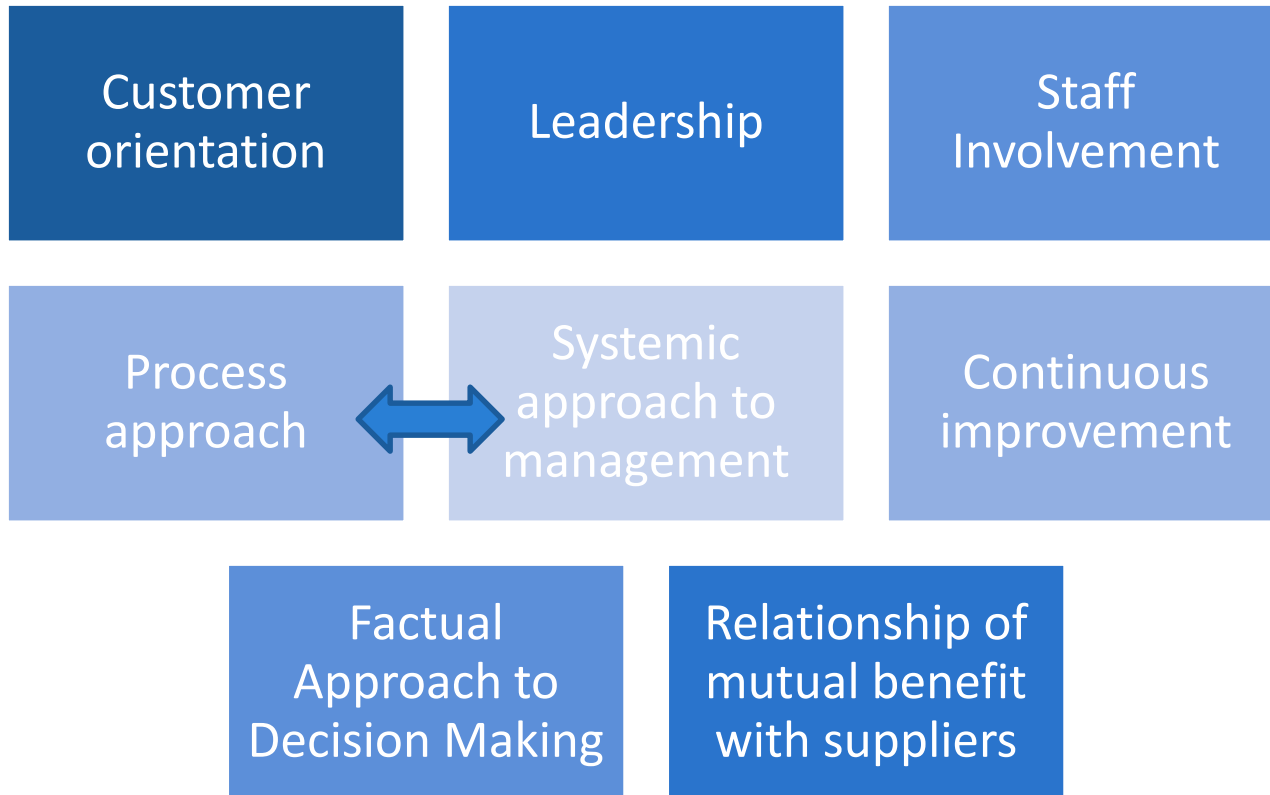


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TQM as an evolution of CQWC



The 8 Principles of Total Quality Management (Now 7.)





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1.3: Quality as a tool for achieving competitive advantage

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Advantages of Total Quality Management



Focus on customer expectations and, with specific reference to the needs of the market, on perceived satisfaction, rather than on technical details of production;

Full involvement of human resources in all phases of the production process;

Constant monitoring of processes, an indispensable element to ensure continuous improvement of company performance



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Learning Unit 2: Standards registration

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TOPICS 2.

1. Definition of standards
2. Purpose of standardization
3. The ISO 9000 and its evolution
4. High Level Structure

Standard:

“a technical specification, adopted by a recognized standardization body, for repeated or continuous application, to which it is not mandatory to comply, and belonging to one of the following categories”:

- a) International standard
- b) European standard
- c) Harmonized standard
- d) National standard.

Purpose of standardization





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2.2: The ISO 9000 international standards: historical evolution and current status

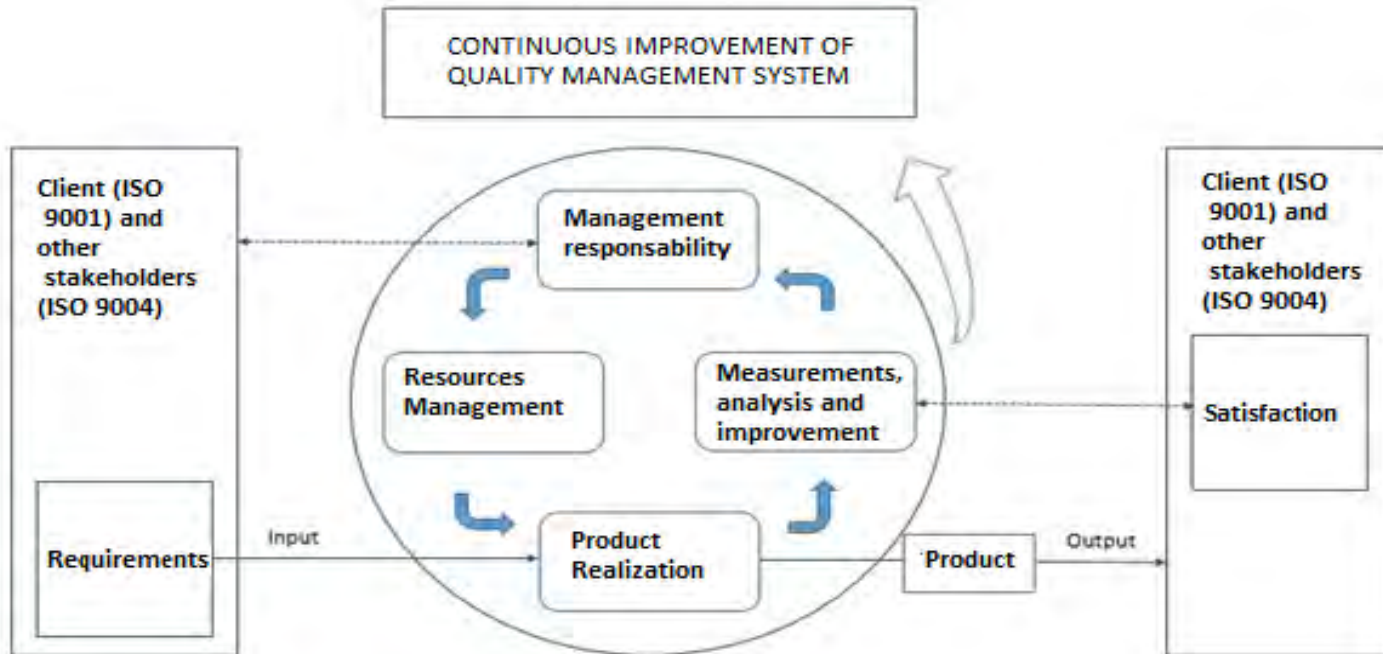
Training Unit 2: Standards registration



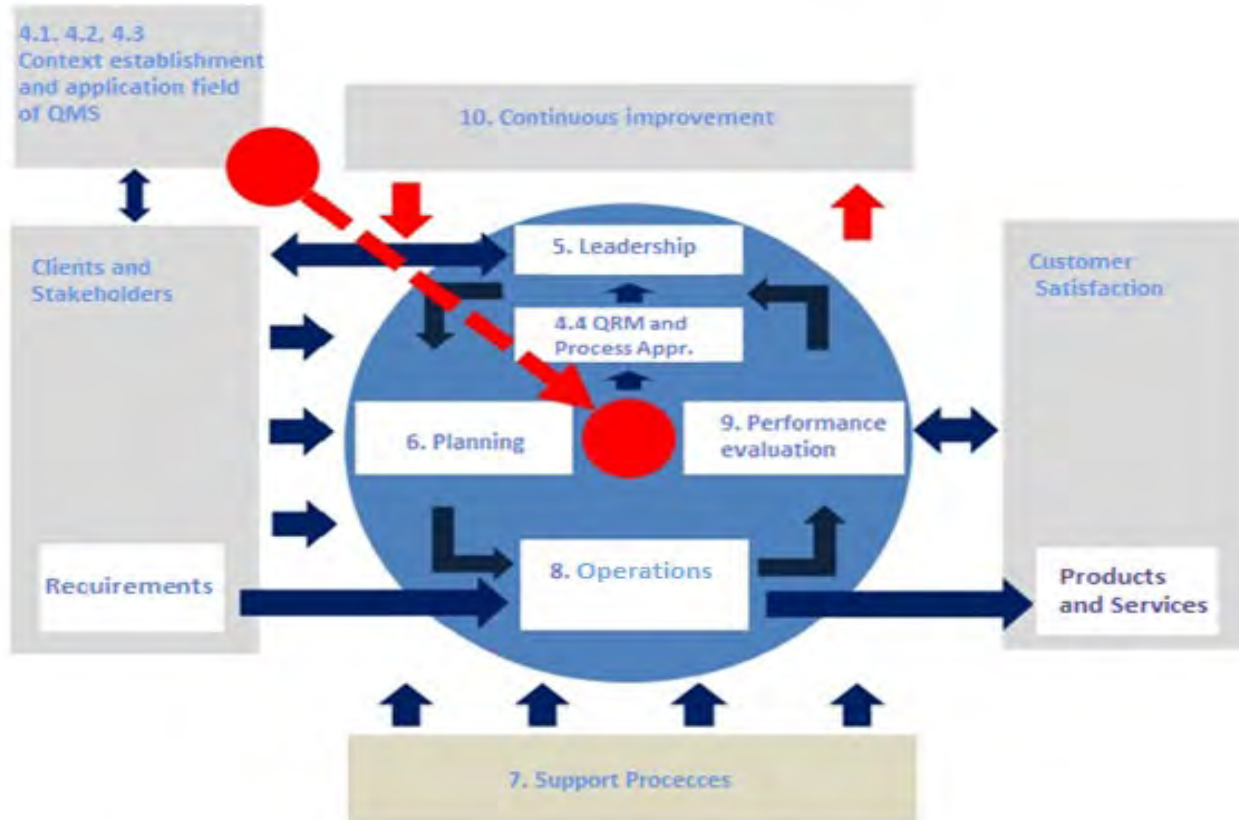
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1994 Version	2000 Version
ISO 9000-1 Quality management and quality assurance standards - Guide for selection and use	ISO 9000 - Systems of management for the quality - Fundamentals and terminology
ISO 9000-2 Quality management and quality assurance standards - Guide for applying ISO 9001/9002/9003	
ISO 9000-3 Quality management and quality assurance standards - Guide for the application of ISO 9001 to software development, supply and maintenance	
ISO 9000-4 Quality management and quality assurance standards - Reliability Management Applications	
ISO 9001 Model for quality assurance in design, manufacturing and service	
ISO 9002 Model for quality assurance in manufacturing, installation and service	
ISO 9003 Model for quality assurance in tests, checks and final controls	ISO 9001 - Systems of management for the quality - Requirements
ISO 9004-1 Quality management and elements of quality systems	ISO 9004 - Systems of management for the quality - Guidelines for the Improvement performance
ISO 9004-2 Quality management and elements of quality systems - service guidelines	
ISO 9004-3 Quality management and elements of quality systems - guidelines for semi-finished products	ISO 19011 - Guidelines for the audits in systems of management for the quality and / or environment
ISO 10011-1 General criteria for inspections of quality systems - inspection activity	
ISO 10011-2 General criteria for quality system audits - qualification criteria for quality system assessors (auditors)	ISO 10012 - Requirements for insurance of quality for appliances of measurement
ISO 10012-1 Quality Assurance Requirements for Measurement Equipment (ApM) - Metrological Confirmation Systems for ApM	
ISO 10012-2 Quality Assurance Requirements for Measurement Equipment (APM) - Guidelines for Monitoring Measurement Processes	

Process-based quality management system (ISO 9000:2000)



The new HLS structure and the new approach to Quality Management Systems





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Learning Unit 3: Quality improvement: Methods and Tools

MODULE 5: Quality Control

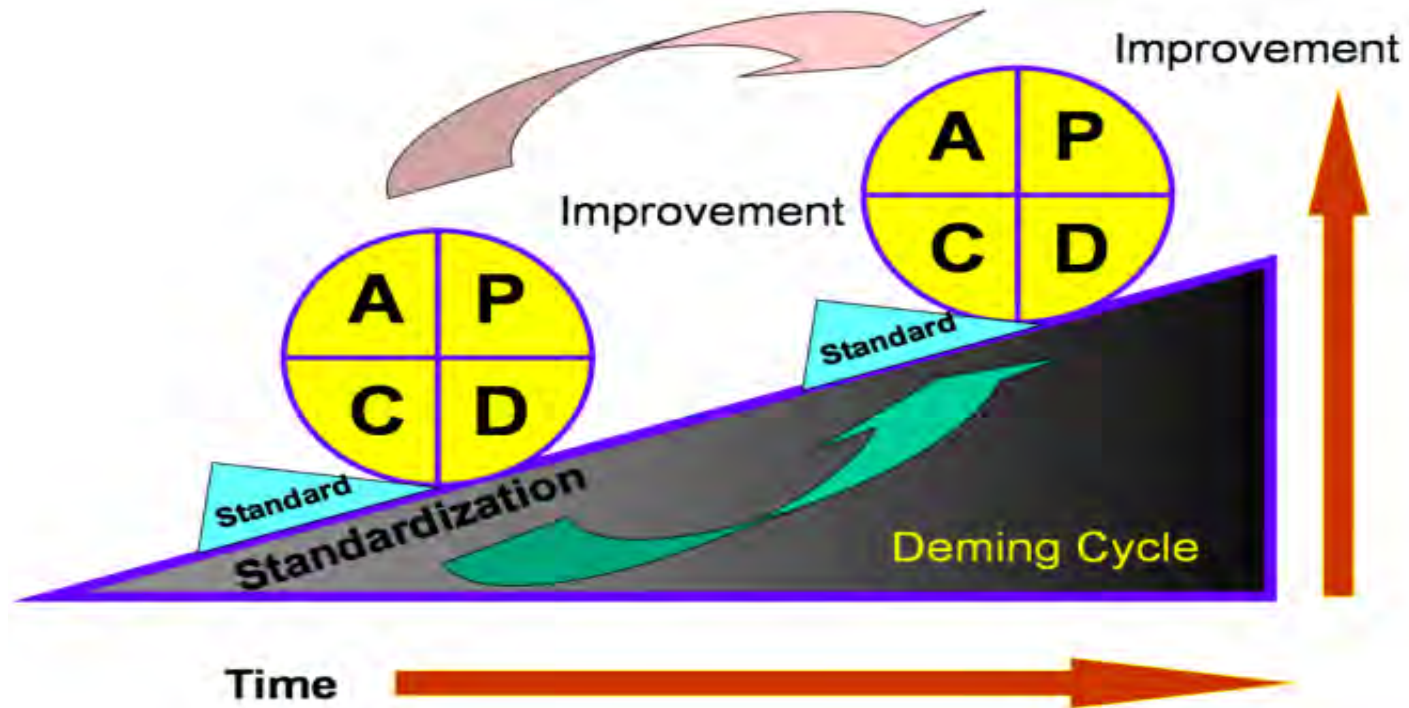


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TOPICS 3.

1. Quality improvement
2. Methods
3. Managerial Tools
4. Statistical Tools

Application of PDCA cycle to improvement



Typologies of intervention

- *On a daily basis*: it is an intervention that can be applied when processes respond to business goals, but can be improved with small interventions that allow to make them more effective and efficient;
- *Breakthrough*: this intervention involves a radical change that allows to achieve an improvement in the performance of one or more process;
- *The re-engineering of the system*: this type of intervention is necessary when the whole organizational paradigm it is no longer adequate to guarantee the achievement of strategic objectives business. It determines an organizational innovation.

Examples

Lean model

- It is a **managerial philosophy** that aims to minimize the waste up and has the goal of creating value using only the essential resources from the perspective of continuous improvement.

Benchmarking

- It is a methodology of **TQM** that allows organizations to activate a process of continuous improvement through comparison of best practises

Quality Function Deployment

- The **QFD** is a methodology used for increase customer satisfaction through the quality of the product/service offered

Six Sigma

- **Six Sigma** is a method (developed in the second half of the 1980s) that provides organizations tools to improve the capability of their business processes



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3.2: Managerial tools

Training Unit 3: Quality Improvements: methods and tools



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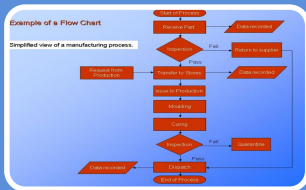
Managerial tools

are **problem finding** techniques supporting problem identification



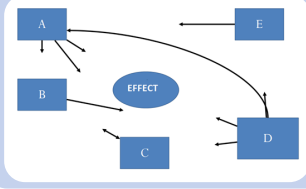
Brainstorming

- It is a technique that stimulates the creativity of a group, allowing the emergence of ideas that nobody, individually, would have thought.



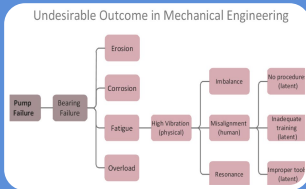
The flow chart

- A process flow chart is a logical, relatively easy to understand chart, which displays how a process operates via using standard symbols to represent activity



The relationship diagram

- It is a managerial tool through which the logical links between different aspects concerning a problem are sought



The three diagram

- It is a tool that systematically draws the full spectrum of paths that must be followed to achieve a primary objective and all lower-order objectives.



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3.2: Statistical tools

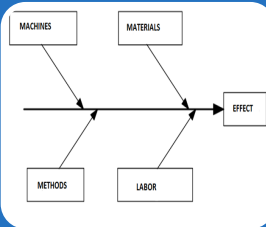
Training Unit 3: Quality Improvements: methods and tools



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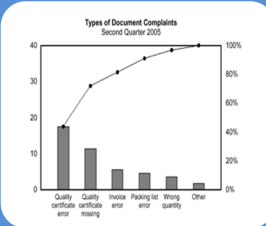
The **statistical tools**

are quantitative techniques that support the analysis of problems with the aim of reducing them and exploring their causes



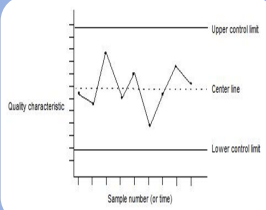
Histogram

- It is a graphical tool that allows to have a complete and concise view of the data collected, also providing an address to the analysis of the causes.



Pareto Diagram

- It is a graphical methodology useful to identify the most important problems in the situation under examination and therefore the intervention priorities



Control Chart

- It is a graphical tool that allows to check whether a process is under control or if it provides consistent results with the initial plan.

References

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