

Introduction to Quality Management

Introduction to Quality Management

(A concise, easy-to-read guide for students, new hires, or anyone getting started with quality concepts.)

1. What Is Quality Management?

Aspect	Definition
Quality	The degree to which a product, service, or process meets customer needs and expectations.
Quality Management (QM)	A coordinated set of activities that direct and control an organization to improve quality, ensure consistency, and satisfy stakeholders.
Goal	Deliver value?adding outputs while minimizing waste, defects, and re?work.

2. Core Components of Quality Management

Component	Purpose	Typical Tools/Techniques
Quality Planning	Define quality objectives, standards, and processes needed to meet them.	Quality Policy, Quality Objectives, Process Mapping, Benchmarking
Quality Assurance (QA)	Provide confidence that quality requirements will be fulfilled.	Audits, Process Checklists, SOPs, Compliance Reviews
Quality Control (QC)	Monitor and verify that outputs meet specifications.	Inspection, Statistical Process Control (SPC), Control Charts, Acceptance Sampling
Quality Improvement	Continuously enhance processes, products, and services.	PDCA Cycle, Six Sigma, Lean, Kaizen, Root?Cause Analysis

3. Key Quality Management Standards & Frameworks

Standard / Framework	Origin	Scope	Typical Use
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ISO 9001	International Organization for Standardization	Generic QMS for any organization	Certification, market access
ISO/TS 16949 (IATF 16949)	Automotive industry	QMS for automotive supply chain	Supplier qualification
ISO 13485	Medical devices	QMS for medical device manufacturers	Regulatory compliance
Six Sigma	Motorola / GE	Reducing variation & defects (DMAIC)	Process optimization
Lean	Toyota Production System	Eliminating waste, improving flow	Production & service environments
Total Quality Management (TQM)	1980s movement	Organization-wide culture of quality	Continuous improvement culture
Baldrige Excellence Framework	U.S. National Institute of Standards & Technology	Performance excellence across sectors	Self-assessment, benchmarking

4. The PDCA (Deming) Cycle

1. **Plan** – Identify a goal, define processes, and establish metrics.
2. **Do** – Implement the plan on a small scale or pilot.
3. **Check** – Measure results, compare with expectations, and analyze gaps.
4. **Act** – Standardize successful changes or adjust the plan for the next cycle.

Why it matters: Provides a simple, repeatable loop for continuous improvement.

5. Common Quality Tools (the “7 Basic Tools”)

Tool	When to Use	What It Shows
Pareto Chart	Identify the most significant factors (80/20 rule)	Frequency or impact of problems
Cause-and-Effect (Fishbone) Diagram	Brainstorm root causes of a problem	Relationship between causes & effect
Histogram	Visualize data distribution	Variation patterns

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Tool	When to Use	What It Shows
Control Chart	Monitor process stability over time	In?control vs. out?of?control signals
Scatter Plot	Explore correlation between two variables	Strength & direction of relationship
Flowchart (Process Map)	Document steps in a	