Total Quality Management

- The way of managing organization to achieve excellence
- Total – everything
- Quality – degree of excellence
- Management – art, act or way of organizing, controlling, planning, directing to achieve certain goals

Definition of TQM (BS 4778:1991)

"A management philosophy embracing all activities through which the needs and expectations of the CUSTOMER and COMMUNITY, and the objectives of the organization are satisfied in the most efficient and cost effective manner by maximising the potential of ALL employees in a continuing drive for improvement."

TQM

- Requires cultural change – prevention not detection, pro-active versus fire-fighting, life-cycle costs not price, etc.

- Many companies will not start this transformation unless faced with disaster/problems or forced by customers

Effect of TQM (Quality Improvement)

Improve Quality (Product/Service)

↓

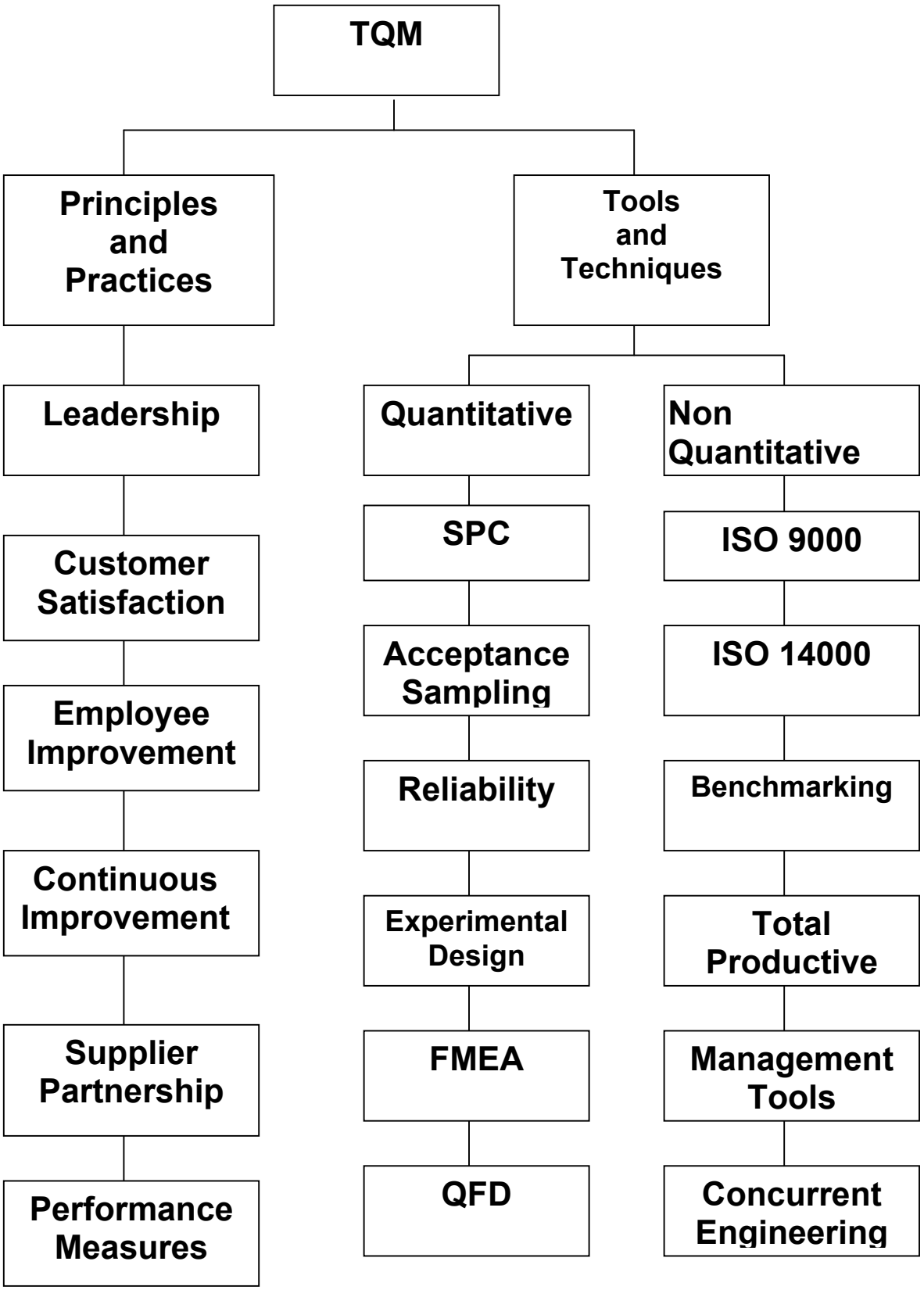
Increase Productivity (less rejects, faster job)

↓

Lower Costs and Higher Profit

↓

Business Growth, Competitive, Jobs, Investment



Scope of the TQM activity

TQM Six Basic Concepts

1. Leadership
2. Customer Satisfaction
3. Employee Involvement
4. Continuous Process Improvement
5. Supplier Partnership
6. Performance Measures

(All these present an excellent way to run a business)

Criteria 1
Leadership

- Top management must realize importance of quality
- Quality is responsibility of everybody, but ultimate responsibility is CEO
- Involvement and commitment to CQI
- Quality excellence becomes part of business strategy
- Lead in the implementation process

Characteristics of Successful Leaders

1. Give attention to external and internal customers
2. Empower, not control subordinates. Provide resources, training, and work environment to help them do their jobs
3. Emphasize improvement rather than maintenance
4. Emphasize prevention
5. Encourage collaboration rather than competition
6. Train and coach, not direct and supervise
7. Learn from problems – opportunity for improvement
8. Continually try to improve communications
9. Continually demonstrate commitment to quality
10. Choose suppliers on the basis of quality, not price
11. Establish organisational systems that supports quality efforts

Implementation Process

- Must begin from top management
- Cannot be delegated (lack of involvement cited as principle reason for failure)
- Top/senior management must be educated on TQM philosophy and concepts
- Visits to TQM companies, read books, attend seminars
- Need a roadmap/framework for implementation – consider timing (any crisis)
- Formation of Quality Council – policies, strategies, programmes

Criteria 2

Customer Satisfaction

- Customer is always right – in Japan customer is “King”
- Customer expectations constantly changing – 10 years ago acceptable, now not any more!
- Delighting customers (Kano Model)
- Satisfaction is a function of total experience with organization
- Need to continually examine the quality systems and practices to be responsive to ever – changing needs, requirements and expectations – Retain and Win new customers

Issues for customer satisfaction

Checklist for both internal and external customers

1. Who are my customers?
2. What do they need?
3. What are their measures and expectations?
4. Does my product/service exceed their expectations?
5. How do I satisfy their needs?
6. What corrective action is necessary?

Customer Feedback

- Discover customer dissatisfaction
- Discover priorities of quality, price, delivery
- Compare performance with competitors
- Identify customer's needs
- Determine opportunities for improvement

Customer Feedback Tools/Method

- Warranty cards/Questionnaire
- Telephone/Mail Surveys
- Focus Groups
- Customer Complaints
- Customer Satisfaction Index

Good experience are told to 6 people while bad experience are repeated to 15 people

Criteria 3

Employee Involvement

- People – most important resource/asset
- Quality comes from people
- Deming – 15% operator errors, 85% management system
- Project teams – Quality Control Circles (QCC), QIT
- Education and training – life long, continuous both knowledge and skills
- Suggestion schemes; Kaizen, 5S teams
- Motivational programmes, incentive schemes
- Conducive work culture, right attitude, commitment

Criteria 4

Continuous Process Improvement

- View all work as process – production and business
- Process – purchasing, design, invoicing, etc.
- Inputs – PROCESS – outputs
- Process improvement – increased customer satisfaction
- Improvement – 5 ways; Reduce resources, Reduce errors, Meet expectations of downstream customers, Make process safer, make process more satisfying to the person doing

Problem – Solving Method

1. Identify the opportunity (for improvement)
2. Analyze the current process
3. Develop the optimal solution(s)
4. Implement changes
5. Study the results
6. Standardize the solution
7. Plan for the future

Identify the opportunity (for improvement)

- Phase 1 – Identify problems
- Use Pareto Analysis – external & internal failures, returns
- Phase 2 – Form a team (same function of multifunctional)
- Phase 3 – Define scope of problem (Paint process – data collected foe a week showed high 30% ‘runs’ defect)

Analyze the current process

- Understand the current process, how it is performed
- Develop process flow diagram
- Define target performance
- Collect data, information
- Determine causes not solution (use cause and effect diagram)
- Root cause if possible

Develop the optimal solution(s)

- To establish solutions
- Recommended optimal solution to improve process
- Create new process, combine different process, modify existing process
- Creativity (rubber pad adhesive, door trim)
- Brainstorming, Delphi, Nominal Group Technique
- Evaluate and testing of ideas/possible solutions

Implement changes

- To prepare implementation plan, obtain approval, conduct process improvements, study results
- Why is it done? How, When, Who, When it will be done?

Study the results/Standardize the solution/Plan for the future

- Measure and evaluate results of changes
- Standardize solution – certify process, operator, done?

Positron Control Wave Soldering Process					
What	Specs	Who	How	Where	When
A 880 Flux	0.864 g 0.008	Lab technician	Specific gravity	Lab	Daily

- Next project/problem areas

Criteria 5

Supplier Partnership

- 40% prod. Cost comes from purchased materials, therefore supplier Quality Management important
- Substantial portion quality problems from suppliers
- Need partnership to achieve quality improvement – long-term purchase contract
- Supplier Management activities
- Define product/program requirements;

1. Evaluate potential and select the best suppliers
2. Conduct joint quality planning and execution
3. Require statistical evidence of quality
4. Certify suppliers, e.g. ISO 900, Ford Q1
5. Develop and apply Supplier Quality Ratings
    - Defects/Percent non-conforming
    - Price and Quality costs
    - Delivery and Service

Criteria 6

Performance Measures

- Managing by fact rather than gut feelings
- Effective management requires measuring
- Use a baseline, to identify potential projects, to asses results from improvement
- E.g. Production measures – defects per million, inventory turns, on-time delivery
- Service – billing errors, sales, activity times
- Customer Satisfaction
- Methods for measuring
- Cost of poor quality
    - Internal failure
    - External failure
    - Prevention costs
    - Appraisal costs

Performance Measures (continue)

- Award Models (MBNQA, EFQM, PMQA)
    - Awards criteria
    - Scoring
- Benchmarking – grade to competitors, or best practice
- Statistical measures – control charts, Cpk
- Certifications
    - ISO 9000:2000 Quality Mgt System
    - ISO 14000 Environmental Mgt System,
    - Underwriters Lab (UL), GMP
    - QS 9000, ISO/TS 16949

Deming's 14 Points for Management

1. Create constancy of purpose towards improvement of product and service with aim to be competitive, stay in business and provide jobs.
2. Adopt a new philosophy – new economic age, learn responsibilities and take on leadership for future change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into product in the first palace.
4. End the practice of awarding business on the basis of price, instead, minimize total costs.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, thus decreasing costs.
6. Institute training on the job
7. Institute leadership, supervision to help do a better job.
8. Drive out fear, everyone can work effectively for company.
9. Breakdown barriers between departments. Work as teams to foresee production problems.
10. Eliminate slogans, exhortations, and targets for workforce.
11. Eliminate numerical quotas on the workforce.
12. Remove barriers that rob people pride of workmanship.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody to work to accomplish the transformation.