Putting is All Together

Lecture XVIII

Quality: Past to Present

Changes in Quality Management have been the result of

- advances in technology
  (i.e., information technology, automation)
- changes in management culture and focus
  (i.e., due to competition worldwide)

Quality: Past to Present

Evangelical leaders in quality management (Shewhart, Juran, Deming, Taguchi),

But most of the enduring advances have come from practitioners solving day-to-day problems

Quality Tools Past to Present

Most of the effective tools used today are not new

(control charts, cause-effect diagram, histogram, Pareto chart, etc.).

Nor are the "rocket science"

Quality: Past to Present

Virtually everything in the “6-sigma methodology”

was suggested by Shewhart, Deming, Juran, Ishikawa, etc.

50+ years ago

Quality: Present to Future

Tools used by competitors, but not fully utilized today

Design of Experiments collect, analyze and interpret data to improve products and processes

Still not “rocket science”
Quality: Present to Future

Important shifts:

From simply being within the spec limits to
Designing robust processes and products that is on target and has minimum variance

Quality: Present to Future

Important shifts:

From quality “in my department” to quality “across the complete supply chain”

World Wide

Quality: Present to Future

Important shifts:

Importance of Quality in Lean Enterprises
(Just-in-time, pull vs. push systems, low inventories, etc.)

Quality: Present to Future

Important shifts:

From a focus on appraisal and internal costs to prevention and external costs [again – not new]
Important shifts: Quality of Design

- DMAIC
- DMADV
- DCCDI
- IODV
- DMEDI

Use of Quality Function Deployment (QFD)
Systematic approach to analyzing your company's capacities relative to customer expectations and your competitors' capabilities

Important shifts: Focus on Variation (Product and Process)
- Taguchi Philosophy and Methods
  - Robust design
  - On target
  - Minimum variance
  - Loss Function

Important shifts: Focus on Continuous Improvement
- Kaizen
- Lean manufacturing
  - Value Stream Mapping
  - 5-S
  - Reduce Muda

Important shifts: Supplier Selection
- Certification
- Qualification

ISO 9000

Important shifts: Recognition of Quality Efforts
- Malcolm Baldrige National Quality Award
Quality: Present to Future

Important shifts:

Moving from a focus on Statistical process control to Decisions based on designed experiments

Using Designed Experiments to determine the optimum design of products and processes and design robust product and process designs

Important shifts:

Using Factorial Designs (ANOVA) to determine the relationships among design and process variables.

Using Regression Analysis to predict the effects of modifying design and process variables and

Summary

There have been significant changes in quality management philosophy. Both within organizations and between organizations.

Although many of the tools have existed for decades, their effective implementation has improved decision making. Both within organizations and between organizations.
Summary

Continuous improvement will continue to be necessary to stay competitive in a worldwide marketplace.