

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 world wide)

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 Shewart, 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

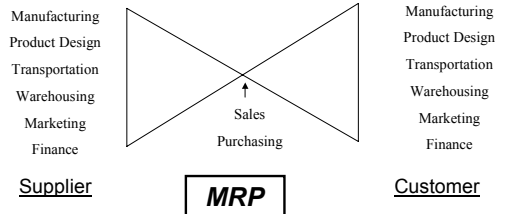
Quality: Present to Future

Important shifts:

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

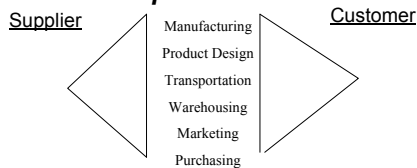
Quality: Present to Future

Important shifts:



Quality: Present to Future

Important shifts:



Electronic Data Interchange (EDI)

Quality: Present to Future

Important shifts:

**From a focus on
appraisal and internal costs
to
prevention and external costs
[again – not new]**

Quality: Present to Future

**Important shifts:
Quality of Design**

**DMAIC
DMADV
DCCDI
IODV
DMEDI**

Quality: Present to Future

**Important shifts:
Quality of Design**

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

Quality: Present to Future

Important shifts:

**Focus on Variation (Product and Process)
Taguchi Philosophy and Methods
Robust design
On target
Minimum variance
Loss Function**

Quality: Present to Future

Important shifts:

**Focus on Continuous Improvement
Kaizen
Lean manufacturing
Value Stream Mapping
5-S
Reduce Muda**

Quality: Present to Future

Important shifts:

**Supplier Selection
Certification
Qualification**

ISO 9000

Quality: Present to Future

Important shifts:

Recognition of Quality Efforts

Malcomb Baldrige National Quality Award

Quality: Present to Future

Important shifts:

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

Quality: Present to Future

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

Quality: Present to Future

Important shifts:

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

Quality: Present to Future

Important shifts:

**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**

Summary

**Although many of the tools have
existed for decades, there 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.***