

# Engineering Economics & Management

## Reliability & Total Quality Management

25<sup>th</sup> May 16

# Quality Analysis & Six Sigma

25<sup>th</sup> May 16

# Quality Analysis

25<sup>th</sup> May 16

# Definition of Quality

25<sup>th</sup> May 16

**“Quality of a thing is the degree or grade of excellence”**

- Five approaches of quality
  - Transcendental
  - Product based
  - User based
  - Manufacturing based
  - Value based

# Definition of Quality

25<sup>th</sup> May 16

- **Transcendental**
  - Quality is neither mind nor matter, but a third entity independent of the two...even though Quality cannot be defined, you know what it is.
- **Product Based**
  - Quality refers to the amounts of the unpriced attributes contained in each unit of the priced attribute.
- **User Based**
  - Quality consists of the capacity to satisfy wants.

# Definition of Quality

25<sup>th</sup> May 16

- **Manufacturing Based**
  - Quality means conformance to requirements.
- **Value Based**
  - Quality is the degree of excellence at an acceptable price and the control of variability at an acceptable cost.

# Dimensions of Quality

25<sup>th</sup> May 16

- Performance
- Features
- Reliability
- Conformance
- Durability
- Serviceability
- Aesthetics
- Perceived quality

# Total Quality Management

25<sup>th</sup> May 16

“TQM is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society.”

- **Total quality:**
  - Quality of products and services to satisfy some specific needs of the consumer (end user).
  - Quality of return to satisfy the needs of the shareholders.
  - Quality of life, at work and outside work, to satisfy the needs of the people in the organization.



# Six Sigma

25<sup>th</sup> May 16

# Six Sigma

25<sup>th</sup> May 16

- Six Sigma is a statistical measure of quality
  - Based on rigorous process based performance measures.
- A process for continual improvement:
  - Six Sigma is a generic, structured methodology for continual improvement (can be used to improve any process in any business).
- An enabler of cultural change:
  - Six Sigma changes the way organizations work and the way they think.
- A disciplined process focused on delivering near perfect products and services.

# What is Six Sigma

25<sup>th</sup> May 16

- **As a metric**
  - Equates to 3.4 *defects per million opportunities* (DPMO).
  - Started as a defect reduction effort in manufacturing.
- **As a methodology**
  - DMAIC (**D**efine opportunity, **M**easure performance, **A**nalyze opportunity, **I**mprove performance and **C**ontrol performance )
  - DFSS (Design for Six Sigma) /DMADV (**D**efine – **M**easure – **A**nalyze – **D**esign – **V**erify)
- **As a management system**
  - Align business strategy to critical improvement efforts
  - Mobilize teams to attack high impact projects
  - Accelerate improved business results
  - Govern efforts to ensure improvements are sustained

# Six Sigma Project Methodology

25<sup>th</sup> May 16

## Project Phases

Define	Measure	Analyze	Improve	Control
Setup initiative	Collect data	Analyze	Develop and implement solutions	Utilize scorecard to control and sustain
What is our customer problem?	How big is the problem?	What are the root causes for our problem?	How can we improve the problem?	How do we measure and control our improvement?

# Thankyou

*25<sup>th</sup> May 16*