QAI

How Do I Register?

Lean Innovation Six Sigma Black Belt- LISS BB
(10 Days Workshop)

Context of the Program

The Lean Innovation Six Sigma Black belt 10-day program will cover the most contemporary process improvement practices adopted by leading organizations and proponents of Lean Six Sigma in service industry as well as engineering firms within the DMAIC (Define, Measure, Analyze, Improve, & Control), DFSS (Design for Six Sigma) and IDOV (Identify, Design, Optimize and Verify) frameworks.

Participants will be exposed to latest concepts such as (but not limited to):

1. Project management practices related to project selection, resource management, change management, financial management and other applicable areas
2. Data analytic tools and practices that are fast yet effective even in constrained environments where quantity and quality of data is an issue
3. Insights on how simple tools of Six Sigma, that are at times ignored by practitioners, that yield fast and effective results in the process improvement journey
4. Lean or Toyota Production System (TPS) insights that go beyond the introductory concepts related to types of waste and Value Stream Mapping (VSM). Some of these concepts have been lost over time in the translation of text from Japanese to English language
5. TRIZ or Theory of Inventive Problem Solving insights for accelerated thinking in generating sustainable and win-win solutions. These concepts will also be useful for those who wish to practice Design for Six Sigma (DFSS) at a later stage of their career
6. Insights on identifying value creation opportunities that are being adopted for product portfolio design by leading organizations such as Motorola, P&G amongst others
7. Systems thinking tools that reveal the core issues to be tackled in complex real world situations
8. Introduction to Shainin Design of Experiment (DOE) technique for quick validation of prototype results

Introduction to Lean Innovation Six Sigma

Six Sigma is not just an improvement methodology that uses the DMAIC- Define - Measure- Analyze- Improve - Control framework, but it also is -

- A System of management to achieve lasting business leadership and top performance applied to benefit business, customers, associates and shareholders in Service, Manufacturing and BFSI sectors
- A Measure to define the capability of any process
- A Goal for improvement, that targets near perfection through continuous reduction of variation.

According to Michael George, author of the best seller Lean Six Sigma, "Rapid improvement requires both Lean and Six Sigma as an amalgamated approach"-

- Integration with Lean and Innovation
    - Lean Six Sigma is a methodology that maximizes shareholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed and invested capital

- The fusion of Lean and Six Sigma is required because-
  - Lean cannot bring a process in statistical control and
  - Six Sigma, alone cannot dramatically improve the process speed or reduced invested capital.

USPs of the QAI program -

- Integration with Lean and Innovation
- Improvement journey is equally applicable for Service / BFSI / BPO / IT IS / KPO/ Manufacturing / Healthcare / Pharma sectors
- Faculties are consultants in leading organizations from relevant areas with over 15 years of experience
- Case studies and caselets are provided and worked upon during the program, thus giving hands on practice
- Shared documents like- articles, templates and calculators
- Program is widely recognized by industry experts
- Recognized by PMI for PDUs. 70 PDUs are conferred on completion of the training
- Project support by experts over a period of 1 year post training
- Participants are expected to complete 1 BB project after the training. If participants find it difficult to get a project, detailed case studies will have to be completed by the participants within a period of 6 months after the training

LISS Six Sigma Black Belt (LISS BB) Certification Roadmap

The roadmap is given below.
1. Attend the 10-day BB training program split over two phases of 5 days each
2. Obtain 75% or more in the evaluation paper
3. Successfully complete 1 project fulfilling the requirements of Six Sigma DMAIC framework

Software used for data analysis: Minitab v. 15 or above

Course outline and contents

Module 1: Introduction
- Dr. Deming's message to Management- reduction of variation in processes
- Six Sigma Overview, Origin and Application
  - What is Six Sigma?
  - DMAIC, DFSS , IDOV approaches to Six Sigma
  - Six sigma and Organization Structure

Module 2: Define
- Voice of Customer (VOC)
  - Tools for preliminary VOC analysis
    - CTQ Tree
    - Affinity Diagram
    - Kano Model
- Project Charter and Plan
  - Translating business issues to projects
  - Building Goal/Problem Statement
  - Project Scoping
  - Selection of Team Members
  - Assigning of Roles for Team Members
  - Deriving Project Schedule

- Putting together the Business Case and Project Sign Off.
- Six Sigma Finance - Potential savings and their link to defects; estimating potential savings; Cost Avoidance vs. Costs Reduction.
- SIPOC or COPIS or POCIS

- Project selection tools- Pugh matrix and Prioritization matrix
- Team Definition / performance

  - ARMI
  - GRPI-Goals , Roles, Processes, Interpersonal

Module 3: Measure – Process Map Analysis and FMEA

- Types of process flow charts
- VA / NVA Analysis
- Types of FMEA
- Process FMEA

Module 4: Measure - Lean

- What is a Lean or Toyota Production system?
- Why Implement Lean?
- Understanding the Lean Concepts

  - Eight Waste
  - 5-Whys
  - Value Stream Mapping
  - Takt Time
  - Continuous Flow
  - Kaizen
  - Autonomation
  - Push vs Pull

- Elements of current VSM
- Elements of future VSM

Module 5: Measure Phase

- Understanding data

  - Normal distribution
  - Z Value computation
  - Normality test and handling of non- normal data

- Identifying different Xs using Fishbone diagram
- Cause and Effect matrix
- Measurement System Analysis – Attribute Gage R&R

  - Key issues in measuring quality
  - Calibration guidelines
  - Attribute Gage R&R

- Sampling

  - Sampling approach
    - Random Sampling
    - Random Stratified Sampling
    - Systematic Sampling
    - Rational sub-grouping
  - Sampling considerations
  - Calculating sample size: Continuous Data
  - Calculating sample size: Discrete Data

- Process Capability
    - Cp and Cpk
    - Pp and Ppk

Module 6- Analyze Phase

- Data Analysis
    - Pareto Chart
    - Histogram
    - Run Chart
    - Box plot
    - Scatter Plot
    - Multi Vari chart
    - Process Behavior charts
        - ImR chart
        - X bar S, X Bar R chart
        - Charts for Binomial count
            - np chart
            - p chart
        - Chart for Poisson count
            - c chart
            - u chart
        - Hypothesis testing
            - z test
            - t test
            - 2 sample t test
            - Paired t test
            - Sample proportion
            - 2 sample proportion
            - One Way ANOVA
            - Two way ANOVA
            - Chi Square test
            - 1 sample Wilcoxon
            - One way Mood's Median
            - One way Kruskal Wallis
            - 2 sample Mann-Whitney
        - Regression Analysis
        - Multiple Regression Analysis
        - Logistic regression

Improve and Control Phase

- SCAMPER
- Brain writing
- Control-Impact Matrix
- Prioritising solutions
- Piloting the Solution
- Process Control systems
- Process control charts- ImR, p, np,c,u charts
- New Process capability-Cp, Cpk

IDOV Phases of DFSS-

- Identify
    - QFD
- Design

- Introduction to TRIZ
- Core concepts
- Contradiction thinking
- Ideal Final Result
- Systems Thinking
- Functional Modeling

- Optimize and Verify
  - Introduction to DOE- Design of Experiments
  - Aspects of Shainin DOE