Lean Six Sigma Black Belt

The quintessential of analytical excellence, process efficiency and quality leadership

Driving Improvement & Efficiency
Bridging the Way to Excellence & Resilience

To optimize its performance an organization must first understand its processes and thereafter create sustained continuous improvements

As the world of business evolves, the positioning of organizations irrespective of size or sector to appropriately manage growth within well-defined parameters that minimize cost and optimize revenue has never been more important. Actually, the volatility of markets and economies across the globe is increasingly demanding higher levels of refine management and agile leadership, without which, the prospects of survival into the long term can be significantly compromised.

Organizations positioning themselves to better understand and appreciate that financial outcomes are the end result of the management of a myriad of process and performance measures, outperform others and improve their prospects to efficiently manage change and grow, even in volatile situations.

CARIBBEAN
CENTER
FOR ORGANIZATIONAL
Excellence

Excelligence

Your Lean Six Sigma Black Belt

Course Overview

Your Lean Six Sigma Black Belt Certification includes

1

Excelligence

- **Introduction to Lean:** The history and five principles of Lean, defining value, the eight wastes, "Flow" and Value Streams and Kaizen rapid improvement.

- **Introduction to Six Sigma:** The history of Six Sigma, the DMAIC approach, process variation and $Y = f(x)$, DPMO, the "Hidden Factory" and the Critical to (CT) Tree.

- **Writing Effective Problem Statements:** The 5W2H method for writing effective problem statements, use the "Five Why" and defining improvement goals.

- **Introduction to Kaizen:** Introduction to Kaizen rapid improvement and how to plan an execute successful Kaizen events.

- **Using the A3 Report for Rapid Improvement:** How to use the A3 Report for rapid improvement projects.

Your Lean Six Sigma Black Belt Certification includes

2

Excelligence

- **SIPOC Mapping:** Construct SIPOC diagrams to provide a high-level view of a process, incorporating key information about suppliers, process inputs, the process itself, and the key outputs required by customers.

- **Understanding and Implementing 5S/6S:** Establishing 5S/6S workplace environments.

- **Implementing and Facilitating Lean "Huddles":** Learn how to implement and facilitate daily Lean "Huddles".

- **Visual Workplace:** Learn how to leverage visual workplace principles, methods and techniques to enable a work environment to become self-ordering, self-explaining, self-regulating and self-improving..

- **Standard Work:** Understand the principles and methods behind standard work including key components that make up standard work, including takt time and task sequencing.

Your Lean Six Sigma Black Belt Certification includes

3

- **Mapping the Process :** Learn how to map a process using process flow mapping tools and techniques..

- **Spaghetti Diagrams:** Learn how to construct spaghetti diagrams to identify opportunities for improvement in work cell/workplace design and layout.

- **Gemba (Waste) Walks:** Learn how to plan and conduct "Gemba Walks" to better understand the customer experience, identify improvement opportunity and engage the front line team.

- **Failure Modes and Effects Analysis (FMEA):** Identify and assess process risk using the FMEA and leveraging this analysis for continuous improvement.

- **Error-Proofing/Mistake-proofing:** Learn how to apply error-proofing, (Poka Yoke), to improve processes and reduce risk.

Your Lean Six Sigma Black Belt Certification includes

4

Excelligence

- **Controlling the Process:** Introduction to statistical process control (SPC) and using "voice of the process" and control plans to manage and improve your processes.

- **Assessing Process Capability:** Capturing and assessing the voice of the customer. Understanding process tolerance versus specifications. Determining process capability.

- **Constructing Project Charters:** Establishing "winning conditions" for your projects using project charters.

- **Managing Change:** Understand how to assess resistance and conduct change readiness assessments and stakeholder analysis to better manage change.

- **Brainstorming, Affinity Diagrams & Team Voting:** Learn how to facilitate effective brainstorming sessions, group by affinity, and use voting techniques to help prioritize and achieve consensus.

Your Lean Six Sigma Black Belt Certification includes

5

Excelligence

- **Cause & Effect Diagrams & the Five Whys:** Construct cause and effect diagrams. Aka "Ishikawa", "Fishbone". Use of the "Five Whys".

- **Pareto Charts and the 80/20 Rule:** Constructing Pareto charts to focus on the "vital few".

- **Value Stream Mapping:** Learn how to construct value stream maps - an essential Lean tool.

- **Kanban and Material Management:** Eliminating waste and constraints to process flow with improved material management techniques including Kan Ban and point of use systems. JIT,Touch once, batch reduction and single piece flow.

- **Work Levelling/Load Balancing:** Construct a load levelling chart and apply techniques to balance work and reduce bottlenecks.

Your Lean Six Sigma
Black Belt
Certification
includes

6

Excelligence

- **Work Cell Design & Improved Office/Facility Layout:** Improve work cell layout and design to improve flow.

- **Rapid Changeover Techniques/SMED:** Learn techniques for establishing and facilitating Rapid/Quick changeover.

- **Total Productive Maintenance (TPM):** Implementing Total Productive Maintenance (TPM) in the workplace. How to calculate Overall Equipment Efficiency (OEE).

- **Process Control Plans and Control Charts:** Statistical process control (SPC) and implementing process control plans and selecting and constructing control charts and run charts to capture the voice of the process.

- **Introduction to Basic Statistics:** Populations and samples, parameters and statistics, types of data, descriptive and inferential statistics. Central tendency and dispersion, proportions and frequencies.

Your Lean Six Sigma
Black Belt
Certification
includes

7

Excelligence

- **The Normal Distribution:** Understanding the normal distribution and its properties.

- **The Standard Normal (Z) Distribution:** Understanding the standard normal (Z) distribution.

- **Testing for Normality:** Conduct and interpret the results of a normality test.

- **Graphical Analysis - The Histogram:** Introduction to the histogram - features and interpreting results.

- **Graphical Analysis - The Boxplot:** Introduction to boxplots - features and interpreting results.

Your Lean Six Sigma
Black Belt
Certification
includes

8

Excelligence

- **Graphical Analysis - The Scatter Plot:** Introduction to scatter and matrix plots - features and interpreting results.

- **Lean Deployment Strategy and Methods:** Deploying a sustainable Lean strategy. Use of Hoshin (Kanri) Planning, the X-Matrix, Catchball and Bowling Charts.

- **Lean and Green: The Environmental Benefits:** Identifying energy waste, carbon taxes and emissions reduction, Lean and Green supply chains, environmental accounting and reducing energy waste with Lean.

- **Central Limit Theorem and Confidence Intervals:** The Central Limit Theorem. Introduction to confidence intervals and standard error of the mean.

- **Introduction to Hypothesis Testing:** What is a hypothesis test? The null and alternate hypotheses and establishing Alpha (Type I) and Beta (Type II) risk. How to conduct a hypothesis test.

Your Lean Six Sigma
Black Belt
Certification
includes

9

- **Data Collection and Sampling:** Data collection techniques and sampling methods. Sample sizes and Alpha/Beta risk.

- **MSA - Gauge R & R Studies:** Gauge repeatability and reproducibility studies. Assessing for Linearity and Bias. Gauge run charts.

- **MSA - Attribute Agreement Analysis:** Using attribute agreement analysis to assess the quality of your measurement system.

- **Process Capability Measures - Discrete:** Discrete capability studies using Yield, Throughput Yield, Rolled Throughput Yield, DPMO, and Z score/Z Bench,

- **Process Capability Measures - Continuous:** Continuous capability studies and interpreting Cp, Cpk, Cpm, Pp, Ppk, PPM, etc.

Your Lean Six Sigma Black Belt Certification includes

10

- **Correlation and Simple Linear Regression:** Correlation studies and simple linear regression. Interpreting p-values, R-Squared, R-Squared (adj). Correlation versus causation.

- **Discrete & Continuous Probability Distributions:** Introduction to probability distributions including Binomial, Poisson, t-Distribution, F-Distribution, Chi-Square. The concept of the degrees of freedom.

- **Hypothesis Testing - Mean and Median:** Use of the Z-test, (Student) t-Test, Paired sample test, Sign, Wilcoxon, Mann-Whitney, Kruskal-Wallis and Mood's Median tests.

- **Test for Equal Variance:** Homogeneity of Variance. F-Test, Bartlett and Levene's test to test for equal variance.

- **Analysis of Variance (ANOVA) and ANOM:** Analysis of Variance (1 and 2 way) and Analysis of Means (ANOM).

Your Lean Six Sigma Black Belt Certification includes

11

Excelligence

- **Proportion Testing :** Testing for changes in count or frequency using proportion testing (1 and 2 sample).

- **Chi-Square Analysis:** Testing for changes in count or frequency Chi-Square analysis (Goodness of Fit and Test of Independence).

- **Voice of the Customer - Kano Analysis:** Techniques to capture and quantify voice of the customer (VOC) including Kano Analysis, Net Promoter Score (NPS), and use of Pairwise Comparison and Conjoint Analysis.

- **Voice of the Customer - Net Promoter Score:** Techniques to quantify voice of the customer (VOC) using Net Promoter Score (NPS).

- **Use of Data Transformation in Analysis:** Use of Box-Cox and other techniques to transform non-normal data for improved sensitivity of analysis.

Your Lean Six Sigma Black Belt Certification includes

12

Excelligence

- **Introduction to Logistic Regression:** Binary and Ordinal Logistic Regression techniques.

- **Introduction to General Linear Models (GLM):** Use of the General Linear Model to determine whether the means of two or more groups differ. Including random factors, covariates, or a mix of crossed and nested factors.

- **Introduction to Reliability Life Data Analysis:** Introduction to Reliability Life Data Analysis ("Weibull Analysis") and the study and modelling of observed product lives.

- **Introduction to Design of Experiments (DOE):** An introduction to Design of Experiments (DOE) and factorial models. DOE terminology and concepts. Conducting a simple factorial DOE.

- **Introduction to Design for Six Sigma:** Introduction to Design of Six Sigma principles and methods. Using Quality Function Deployment (QFD) and the House of Quality (HOQ) framework.

Excelligence

For more information or to start learning today!

CARIBBEAN CENTER for ORGANIZATIONAL *Excellence*

Email: admin@organizational-excellence.com
Website: https://www.organizational-excellence.com