LSSGB GLOSSARY

1 Sample Sign test: It is the simplest of all the non-parametric tests that can be used instead of a one sample t test.

Affinity chart: An affinity diagram is a tool for organizing large quantities of information from many people. It is often used with Brainstorming and other creative thinking activities. It sorts a large quantity of unorganized information into related categories.

Analytic hierarchy process: It is a decision making method used to deal with complex information.

Autonomation: Transfer of human intelligence to a machine.

Bias: It is a measure of the distance between the measured value and the True or Actual value.

Black Belts: These members lead project teams and conduct detailed analysis required in Six Sigma methodologies. They usually act as team leaders and work on the project on a full-time basis. Black Belts act as instructors and mentors for Green Belts, educating them in Six Sigma tools and methods.

Business case: A tool used to provide details to management and team members on the business values to be achieved by conducting a project.

$\bar{X}$ Chart: It is a plot of the means of subgroup data and shows inter-subgroup or between-subgroup variation.

Common cause variation: It is the variation that can be usually seen in the process.

Contingency plans: A plan specially designed to deal with any unusual even or circumstance.

Control chart: It plots and processes the data (input X data and output Y data) over a period and connects by lines, in order to detect trends or unusual events.

Control plan: It is a written summary description of the system for controlling a process.

Cost-benefit analysis: It is used to evaluate the total anticipated cost of a project compared to the total expected benefits, to determine whether the proposed implementation is worthwhile for a company or project team.

CTQ: Customer requirements, when translated into critical process requirements that are specific and measurable, are called Critical to Quality (CTQ) factors.

CuSum chart: The Cumulative Sum Control or CuSum chart incorporates all the information by plotting the cumulative sums of the deviations of the sample values from the target value.

Cycle time: The time it takes to complete a process from start to finish. Includes actual work time and wait time.

Cyclical variations: Refers to variations among sequential repetitions over a short time.

Defect per million opportunities: Defects per Million Opportunities or DPMO or Nonconformities per Million Opportunities (NPMO) is a common term used in process improvement efforts and is a measure of process performance.

Defects per Million Opportunity (DPMO): It is a measure of process performance. It is done by measuring the number of errors occurring in a business process.

Design of Experiments: It involves conducting a series of planned and scientific experiments that test various input variables and their eventual impact on the output variable. Design of Experiments can be used as a one-stop method for analyzing all influencing factors to arrive at a robust and a successful model.

Design for Six Sigma: DFSS ensures that the Product/Service meets customer requirement. It is generally used while launching a new product or building a new product/process.

DMAIC: It is a data driven process or strategy used for process improvements. DMAIC is an acronym for define, measure, analyze, improve and control.

Failure Mode Effects Analysis (FMEA): It is a tool used to prioritize failure modes and actions; by understanding the reasons and methods of failure, we can plan for improvement. Typically, FMEA is used after some root cause analysis. While DFMEA is used in the design of a new product to uncover potential failures, PFMEA is used on new or existing processes.

Focus group: A group of people that assemble for few hours to explore and discuss about the product before it is launched.

Frequency distribution: Refers to the grouping of data into mutually exclusive categories showing the number of observations in each class.

Friedman test: It is a form of non-parametric test that does not make any assumptions on the shape and origin of the sample.

Green Belts: These members are focused on the basic Six Sigma tools to assist Black Belts' projects; they typically lead project teams working in their own areas of expertise.

Heijunka: It refers to Levelling of production by reducing wastes.

Histogram: A histogram is similar to a bar graph, except that the data in a histogram is grouped into intervals.

Inferential Statistics: It describes the population parameters based on the sample data using a particular model.

Internal customer: A person within business system, who is affected by the product or the service while it is ion development phase.

Inventory: It is referred to as stock.

Jidoka: A term used in Toyota Production System that highlights the root cause of problem and thereby results in the improvement of the process.

Kaizen: A Japanese business philosophy that focusses on continuous improvement in work and productivity.

Kanban: A system where the supply of components is regulated by a series of colored cards.

Kruskal-Wallis test: It is also a non-parametric test used for testing the source of origin of the samples.

Lean: Lean helps in reducing/eliminating wastes and reducing non-value added (NVA) activities from a process. In doing so, LEAN increases continuous flow in the process, as opposed to stop-flow and unbalanced production.

Linearity: It is a measure of consistency of bias over the range of measurement from smaller number to higher number and vice-a-versa.

Mann-Whitney or Wilcoxon Rank Sum test: This is a non-parametric test used to compare two unpaired groups.

Master Black Belts: Experts in Six Sigma statistical tools who act as consultants to team leaders, and offer expertise in the use of Six Sigma tools and methodologies. Master Black Belts often work within a single function, such as marketing or accounting.

Matrix Diagram: It is used to provide information about the relationship and importance of task and method elements of the subject. It shows importance of relations between processes and helps in organizing large amount of inter-process activity.

Measurement System Analysis: MSA is a technique that identifies measurement error (variation) and its sources to reduce variation.

Moderate negative correlation: In moderate negative correlation, as the value of X increases, the value of Y decreases, but not in the same proportion.

Moderate positive correlation: In moderate positive correlation, as the value of X increases, the value of Y also increases, but not in the same proportion.

Mood's median test: It is a non-parametric test that is used to test the equality of medians from two or more different populations.

Multi-Vari studies: It analyses variation, investigates process stability, identifies investigation areas, and breaks down the variation.

No correlation: When a change in one variable has no impact on the other, there is no correlation between them.

***np* chart:** It is used to measure the non-conforming proportions or number of defectives within a standardized group size.

***p* chart**: It is used to measure the non-conforming proportion or defectives.

Pareto chart: It is a histogram ordered by frequency of occurrence. It helps project teams focus on problems causing the greatest number of defects. It is also called the 80/20 rule or "vital few trivial many".

Perfect negative correlation: In perfect negative correlation, as X increases, Y decreases proportionally.

Perfect positive correlation: In perfect positive correlation, as the value of X increases, the value of Y also increases proportionally

Planning matrix: A diagram that shows the task and the factors responsible for completing the task.

Poisson distribution: Poisson distribution is an application of the population knowledge to predict the sample behavior.

Poka-Yoke: Poka-Yoke is a Japanese term for "mistake proofing. Mistake proofing typically looks at every step in the process in detail, and uses creative thinking to develop ways to keep errors from occurring. Examples include, required fields on a computer screen, cars seat belt alarm, double entry passwords, and electric eye on elevator or garage door.

Positional variations: Refers to variations within a single unit where variation is due to location.

Process Capability (CP): It is defined as the inherent variability of a characteristic of a process or a product.

Process capability indices (C_{pk}): It was developed to objectively measure the degree to which a process meets or does not meet customer requirements.

Process mapping: It refers to a workflow diagram which gives a clear understanding of the process or a series of parallel processes.

Project charter: A Charter is a written document, approved by management that defines a team's scope of operation, time frames, mission, objectives, and consequences for the project. It is the formal approval from the senior management to start the project.

Project plan: A project plan is a final approved document used to manage and control project

Quality function deployment: A systematic process to understand the needs of the customer and convert them into a set of design and manufacturing requirements. QFD helps companies design more competitive products in less time and with less cost.

***R* chart**: It is a plot of the subgroup ranges (or if s, plot of subgroup standard deviation) and shows intra-subgroup variation.

Rational subgrouping: It refers to the selection of subgroups or samples in a way that if assignable causes are present, chance for differences between subgroups will be maximized and chance for differences due to assignable causes within a subgroup will be minimized.

Regression: The statistical study of relationships. An analytical tool that allows an assessment of a key outcome and extent to which one or more factors being studied can explain the variation in results.

Replication: The act of copying or reproducing.

Risk Priority Number: A measure employed when calculating risk to identify critical failure modes of a process or design. RPN is calculated by: Severity x Occurrence x Detection.

Rolled Throughput Yield: The cumulative calculation of defects through multiple steps in a process; calculated as the product of the individual yield at each step (expressed as a percentage). For example, in an 8 step process with each step at 99%, the rolled throughput Yield is 99 x 99 x 99 x 99 x 99 x 99 x 99 x 99 or 95%.

Runs: The number of experiments in a design of experiments.

Sample variance: Sample Variance (S2) is the average of the squared differences from the mean.

Seiketsu: It is a Japanese term for Standardize.

Seiri: It is a Japanese term for Sort.

Seiso: It is a Japanese term for Shine.

Seiton: It is a Japanese term for Stabilize.

Shitsuke: It is a Japanese term for Sustain.

SIPOC: It is a tool that is used to identify process elements (suppliers, inputs, process, outputs, and customers) that are relevant to a project. It is also used in scoping a project.

Six Sigma: A method that provides qualitative and quantitative tools to improve business processes. It also describes a highly disciplined, continuous improvement process for delivering and developing near-perfect products and services consistently, with focus on change empowerment, seamless training of resources, and consistent top management support.

Slack time: The latest date an event can occur or can be finished without extending the project time.

Special cause variation: It is the variation that cannot be normally seen in the process.

Specification limits: Limits set by a customer always and not by the business. These limits represent the range of variation the customer can tolerate/accept.

Stability: Stability refers to the ability of a measurement system to show the same values over time when measuring the same repeatedly.

Stakeholder analysis: Identifies all stakeholders impacted by a project and their anticipated and required levels of support for the project. Typical stakeholders include managers, people who work in the process under study, other departments, customers, suppliers and finance.

Statistical Process Control (SPC): SPC aids in the visual monitoring of a process and controls its parameters by placing statistical measures around the process outputs or input variables.

Statistics: It refers to the science of collection, analysis, interpretation, and presentation of data.

Stem and leaf plot: It is used to present data in a graphical format to enable visualizing the shape of a distribution.

Takt time: The theoretical maximum production time required to meet the product demand.

Temporal variations: Refers to variations which occur over longer periods of time.

Theory of constraints: Theory of constraints is a tool to remove bottlenecks in a process that limits production or throughput.

Value stream mapping: A visualization tool to map the path and identify all processes in a product's production path from beginning to end. It helps in identifying and eliminating/reducing non-value added activities.

Visual controls: These are used in visual factory to manage the factory by vision.

Voice of the customer: Voice of Customer (VOC) is a technique to organize, analyze, and profile customer requirements relative to products or services.

X-Y diagram: It is a Six Sigma tool that helps in correlating Inputs (X) and Outputs (Y).

Note: This document is exhaustive and may contain terms which are most commonly used in the context of Lean Six Sigma.