DEFINE

MEASURF ANALYZE

IMPROVE

CONTROL

Activities

- · Identify problem.
- Validate problem statement. Gather voice of the customer and business
- Develop CCRs and CRRs
- · Validate goal statement.
- Validate business case.
- Validate project scope.
- Select and launch team.
- Develop project schedule.
- Complete define tollagte.

Tools

- · Project charter.
- · Project selection tools.
- Value stream man.
- Various financial analyses.
- · Effective meeting skills.
- Stakeholder analysis.
- Communication plan.
- SIPOC map.
- · High-level process map.
- · Project management tools.
- · VOC and Kano analysis.
- RACI and guad charts.

- Appropriately map process.
- · Identify key input, process and output metrics.
- Develop operational definitions.
- Develop data collection plan.
- · Validate measurement system.
- Collect baseline data.
- Develop working cost estimate.
- Determine process performance/
- capability. . Complete measure tollagte.
- · Process mapping.
- · Process cycle efficiency.
- Little's lnw
- Operational definitions.
- · Data collection plan.
- Statistical sampling.
- Measurement system analysis.
- TPM.
- · Generic pull.
- Setup reduction.
- · Control charts.
- Histograms.
- Constraint identification.
- · Process capability.

- Identify potential root causes.
- Reduce list of potential root causes.
- · Confirm root cause to output relationship.
- Estimate impact of root causes on key outputs.
- · Prioritize root causes.
- · Complete analyze tollagte.
- Value analysis.
- · Process constraint ID.
- · Takt time analysis.
- Cause and effect analysis.
- FMFA.
- Hypothesis tests. · Correlation analysis.
- Simple and multiple regression.
- · ANOVA.
- · Components of variation.
- · Conquering product and process complexity.
- · Queuing theory.

- · Develop potential solutions and evaluation criteria.
- · Select best solutions.
- Develop 'to-be' process map(s).
- Develop pilot plan.
- Pilot solution
- Develop full-scale implementation plan.
- . Complete improve tollagte.
- Brainstormina.
- Replenishment pull/kanban.
- Stocking strategy.
- · Process flow improvement.
- Process balancina.
- Analytical batch sizing.
- Total productive maintenance. · Design of experiments.
- · Solution selection matrix.
- 'To-be' process mapping.
- Poka-voke (mistake-proofing).

- Implement mistake-proofing.
- · Develop SOPs, training plan and process controls.
- Implement solution and ongoing process measurements.
- · Identify project replication opportunities.
- Develop final cost estimate.
- · Complete control tollagte.
- . Transition project to process owner.
- · Control charts and SPC.
- · SOPs. • Training plan.
- Communication plan. · Implementation plan.
- · Process control plans.
- . Visual process control tools.
- · Project replication.
- · Project commissioning.
- Team feedback session.

KEY

ANOVA - Analysis of variance

CCR – Critical customer requirements **CBR** — Case-based reasoning

DOE - Design of experiments **FMEA** — Failure mode and effects analysis

RACI – Responsible, accountable, consulted and informed*

SIPOC – Suppliers, inputs, process, outputs and customers**

SOP - Standard operating procedure **SPC** – Statistical process control

TPM - Total productive maintenance

VOC — Voice of the customer

* A RACI chart is a matrix of all the activities or decision-making authorities in an organization matched against all of the roles. At each intersection of activity and role, it is possible to assign somebody as Responsible, Accountable, Consulted or Informed.

** A SIPOC diagram defines a scope of work and identifies the potential gaps between what a process expects from its suppliers and what customers expect from the process.