

Continuous Improvement Toolkit

Cause and Effect Matrix

	Y ₁	Y ₂	Y ₃
X ₁			
X ₂			
X ₃			
X ₄			

Managing Risk

PDPC
FMEA RAID Logs
Fault Tree Analysis
Risk Assessment*
Traffic Light Assessment

Deciding & Selecting

Pros and Cons
Break-even Analysis
Force Field Analysis
Decision Tree
QFD
Kano Analysis
Critical-to Tree
Pugh Matrix
Matrix Diagram
TPN Analysis
Voting
SWOT
Importance-Urgency Mapping
Cost -Benefit Analysis
Prioritization Matrix
Paired Comparison

Planning & Project Management*

RACI Matrix Stakeholders Analysis
PERT/CPM Activity Diagram
Roadmaps Project Charter Gantt Chart
PDCA Control Planning Gap Analysis
Hoshin Kanri Kaizen
How-How Diagram
Tree Diagram** Standard work

Cause & Effect Matrix

Confidence Intervals
ANOVA
Hypothesis Testing
Scatter Plot
Correlation
5 Whys
Chi-Square Test
Fishbone Diagram
TRIZ***

Understanding Cause & Effect

Design of Experiments
Regression
Multi-Vari Charts
Relations Mapping*
Bottleneck Analysis

Identifying & Implementing Solutions***

Mistake Proofing
Pull Systems JIT Ergonomics
Work Balancing Automation
Visual Management
Flow Value Analysis 5S
Wastes Analysis SMED

Understanding Performance

Run Charts
Control Charts
Benchmarking
Sampling
Focus groups
Interviews
Photography
Check Sheets
Measles Charts
Surveys

Brainstorming
Analogy
SCAMPER***
Nominal Group Technique
Mind Mapping*
Affinity Diagram
Attribute Analysis

Data Collection

Critical Incident Technique
Observations

Creating Ideas**

Lateral Thinking
Visioning

Designing & Analyzing Processes

Time Value Map Process Redesign
IDEF0 Value Stream Mapping SIPOC
Flow Process Chart Process Mapping
Flowcharting Service Blueprints

- Cause and Effect Matrix

Cause and Effect Matrix:

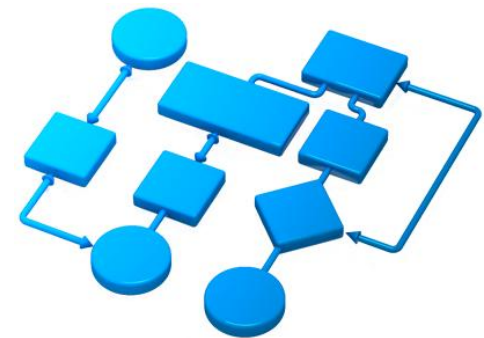
- ❑ Used to understand the relationship between causes and effects.
- ❑ Consists of a two-dimensional array.
- ❑ **It will help:**
 - Determining the nature the problem.
 - Prioritizing potential causes.
 - Minimizes the need for more expensive statistical evaluation of inputs that are unlikely to have an impact on the output.

	Y ₁	Y ₂	Y ₃
X ₁			
X ₂			
X ₃			
X ₄			

- Cause and Effect Matrix

Approach:

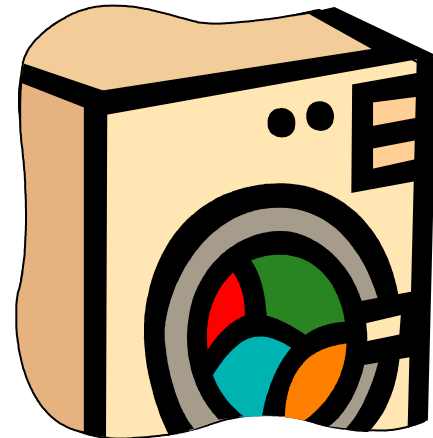
- ❑ Identify the problem and the possible causes (Fishbone diagram).
- ❑ The (X's) will be listed along the left side of the matrix.
- ❑ The (Y's) will be listed along the top of the matrix.
- ❑ The (Y's) are then ranked in terms of importance.
- ❑ The relationship between causes and effects are ranked and an overall score is calculated.
- ❑ The causes with the highest overall score should be addressed first in improvement efforts.



- Cause and Effect Matrix

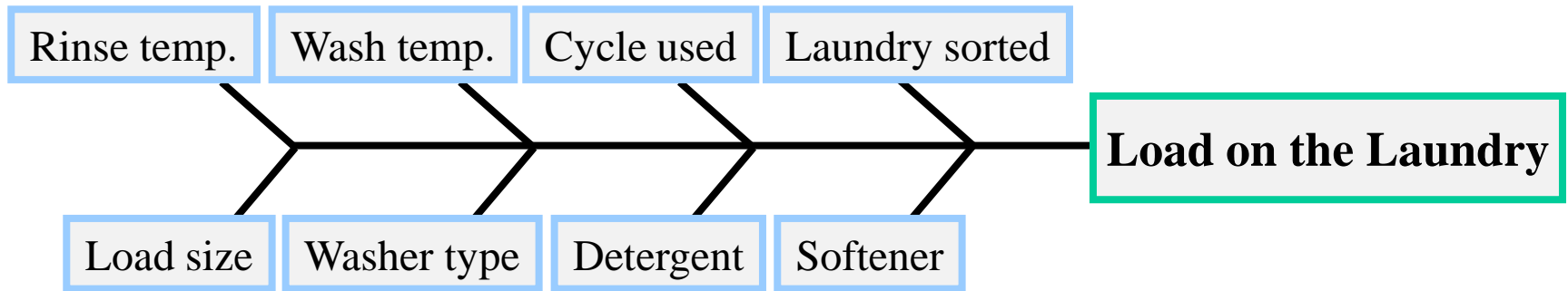
Example – Explore the Process of Doing a Load of Laundry:

- ❑ **The “Critical to Quality” factors for the process:**
 - ❑ Clean clothes.
 - ❑ Clothes smell good.
 - ❑ Wrinkle-free.
 - ❑ No shrinkage.



- Cause and Effect Matrix

Example – Explore the Process of Doing a Load of Laundry:



- Cause and Effect Matrix

Example – Explore the Process of Doing a Load of Laundry:

Inputs / Outputs	Clean clothes	Clothes smell good	Wrinkle free	No shrinkage	Score
Weight	10	7	5	3	
Laundry sorted	9			9	117
Cycle used	3	1	1	3	51
Wash temperature	9	1		3	106
Rinse temperature			1		5
Load size	3		9		75
Softener		9	3	1	81
Detergent	9	3	3	1	129
Washer type	3		3		45