Continuous Improvement Toolkit

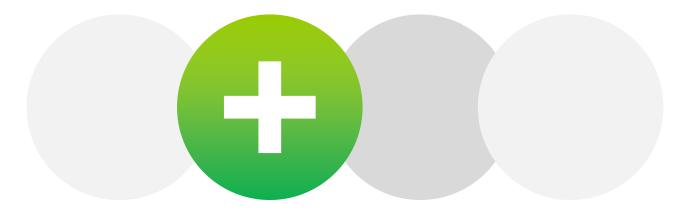
Pugh Matrix



The Continuous Improvement Map

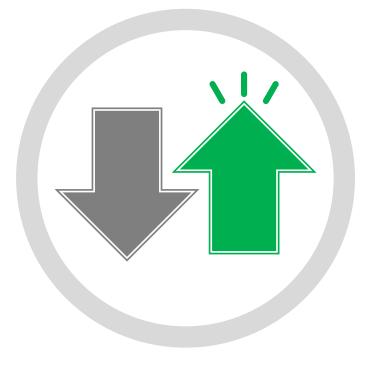
Managing	Selecting & Decision Making Planning & Project Management*
Risk PDPC	Break-even Analysis Importance Urgency Matrix Daily Planning PERT/CPM
FMEA RAID Log*	Quality Function Deployment Cost Benefit Analysis MOST RACI Matrix Activity Networks
Risk Analysis*	Payoff Matrix Delphi Method TPN Analysis SWOT Analysis Stakeholder Analysis
Fault Tree Analysis De	cision Tree Pick Chart Voting Four Field Matrix Project Charter Improvement Roadmaps
Traffic Light Assessment	Critical-to X Force Field Analysis Portfolio Matrix PDCA Policy Deployment Gantt Charts
Lean Measures OEE K	ano Decision Balance Sheet Paired Comparison DMAIC Kaizen Events Control Planning
Process Yield	st of Quality* Pugh Matrix Prioritization Matrix A3 Thinking Standard Work Document control
Project I	KPIs KPIs Pareto Analysis Matrix Diagram Understanding Best Practices Implementing
	iptive Statistics Chi-Square Nonparametric Cause & Effect TPM Automation Solutions***
	obability Distributions Hypothesis ANOVA DOE Mistake Proofing Health & Safety
	ograms Normal Distribution Multivariate Multi-vari Studie <mark>s Simulation Just in Time 5S</mark>
Gra	phical Methods Scatter Plots Correlation Regression Quick Changeover Visual Management
Understanding Performance**	un Charts 5 Whys Root Cause Analysis Data Mining Product Family Matrix Flow Pull
	trol Charts Fishbone Diagrams Relations Mapping SIPOC* Spaghetti** Process Redesign
Data collection planner*	Sampling How-How Diagram*** Tree Diagram* Waste Analysis** Value Stream Mapping**
Check Sheets** Interview	Brainstorming SCAMPER*** Attribute Analysis Value Analysis** Process Mapping
Questionnaires Focus	
Data Observa	ations Mind Mapping* Lateral Thinking Flowcharting IDEF0 Service Blueprints
Collection Sugg	gestion Systems Five Ws Group Creativity Designing & Analyzing Processes

A selection method used to **compare** and **select** the best solution from a set of alternative proposals



Helps determine which of the solutions are more valuable than the others

A form of **Prioritization Matrix**



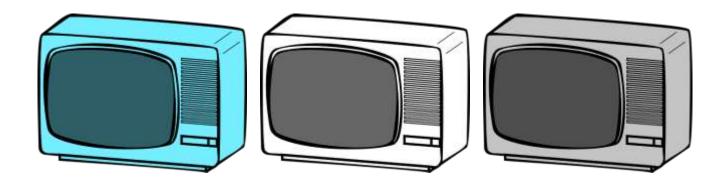
The alternative proposals are compared against **a standard . .**

The current solution that already exists

A **goal** or benchmark to be reached in the near future



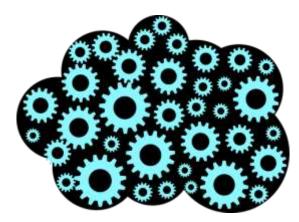
It allows for example to compare multiple design concepts versus a baseline design using customer requirements (VOC) as the criteria for comparison



Benefits

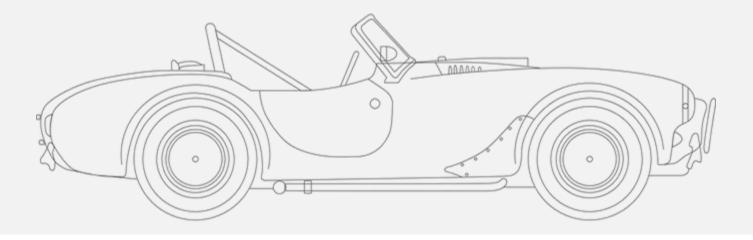
Does not require a great amount of quantitative data

Subjective opinions about one alternative versus an be made **more objective**



Uses

Often used when making **design** decisions during the product development cycle

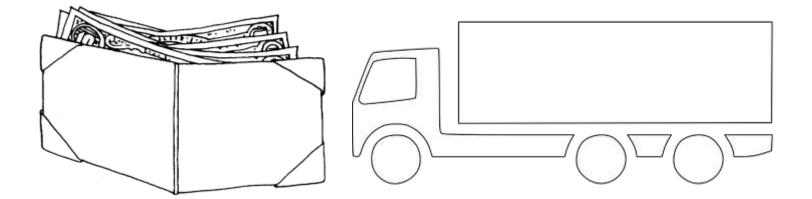


Other Uses

Deciding which **investment** to take

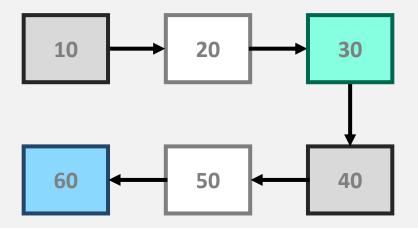
Deciding which vendor to select

Deciding which **improvement project** to initiate



Other Uses

When **designing or redesigning processes** to achieve faster, more convenient and more efficient performance

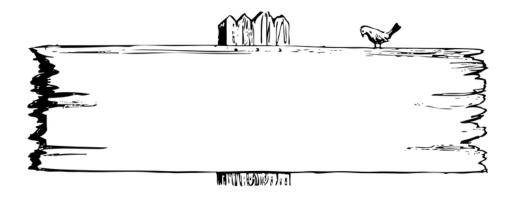


Developing a **list of criteria** is the first step before evaluating the alternatives

Criteria	Weight	Baseline	1	2
1				
2				
3				
4				
		Score		
		Rank		

For evaluating product designs, use VOC requirements as the criteria

For evaluating **improvement proposals**, use customer requirements (VOC) or organizational improvement goals



Each criteria item can be given a **weight value** to indicate its importance

These weights can be set by a group of experts or by the team

Criteria	Weight	Baseline	1	2	
1	1				
2	3				
3	1				
4	5				
Score					
	Rank				

The more important the criteria, the higher the weight it can be given

The baseline solution is always set to Zero

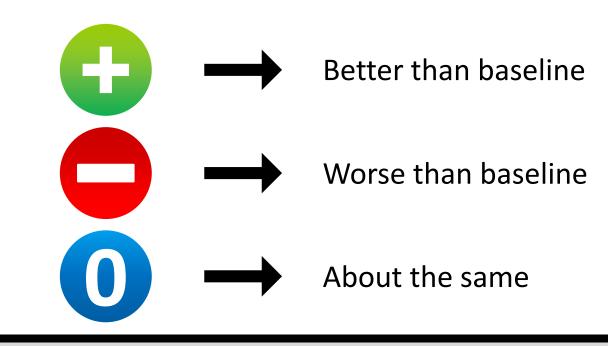
Criteria	Weight	Baseline	1	2
1	1	0		
2	3	0		
3	1	0		
4	5	0		
		Score		
		Rank		

Indicate how the baseline solution is **compared with** each of the alternatives by placing a plus, minus, or zero

Criteria	Weight	Baseline	1	2	
1	1	0	+	-	
2	3	0	-	-	
3	1	0	+	+	
4	5	0	0	+	
	Score				
	Rank				

Scoring

For each alternative, determine whether the alternative is better, same or worse than the baseline

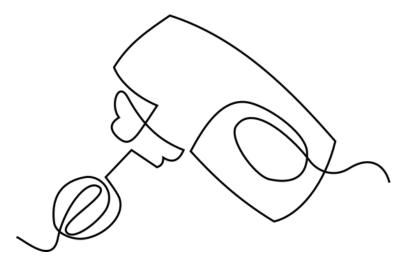


The final scores can be obtained by adding up the weighted scores for each alternative

Criteria	Weight	Baseline	1	2	3	4
1	1	0	+	-	+	0
2	3	0	-	-	0	-
3	1	0	+	+	+	0
4	5	0	0	+	+	-
		Score				
		Rank				

The **selection** of the best solution is then made based on the obtained scores

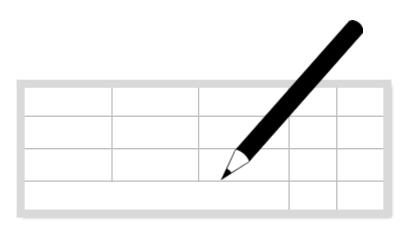
Further solutions can then be developed by mixing the positive aspects of a number of solutions



How to Construct and Use the Pugh Matrix

Clearly explain the **purpose** for constructing the pugh matrix

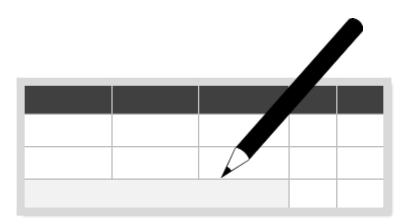
Prepare the list of **alternative** proposals and Identify the relevant **criteria**



How to Construct and Use the Pugh Matrix

Draw a table, then place the criteria in the left hand column and the alternatives in the top row

Select the **baseline solution** or benchmark to be used as a standard for comparison



How to Construct and Use the Pugh Matrix

Indicate how the baseline solution is compared with each of the alternatives by placing a plus, minus, or zero

Notice the strongest solutions, the one with the most pluses and the fewest minuses

Look for opportunities to combine the best aspects of different solutions

Example – Concept Selection from Among Three Alternatives:

Criteria	Alternative 1	Alternative 2	Alternative 3	Baseline	Weight
Safe	-	_	0	0	
Durable	+	0	_	0	
Weight	-	_	+	0	
Easy to assemble	+	0	_	0	
Reliable	-	_	_	0	
Cost	+	0	+	0	
Net Score	0	-3	-1		
Rank	1	3	2		
Continue?	Yes	No	No		