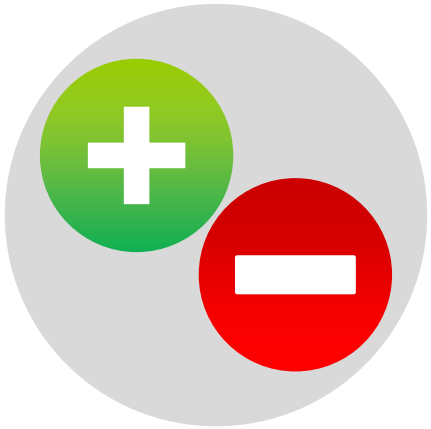
Simple | Smart | Speed

CHOOLS

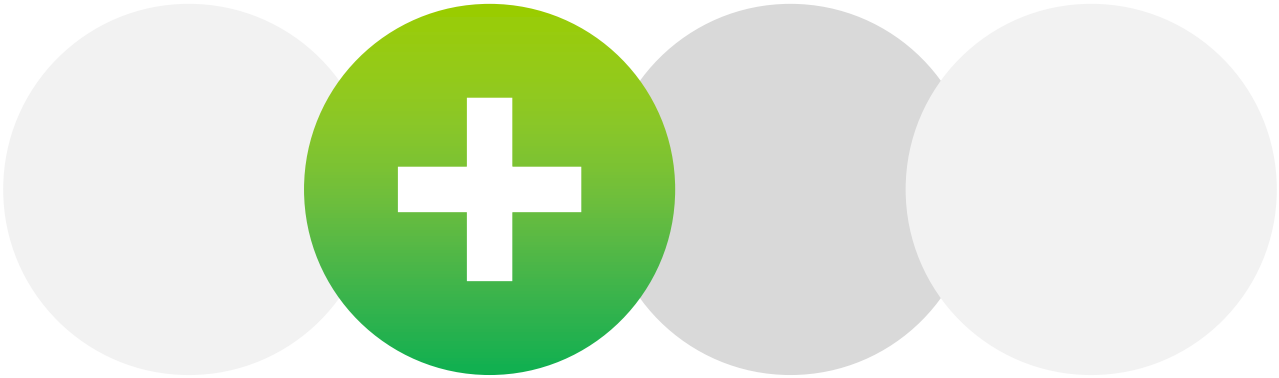
Pugh Matrix




Managing Risk
PDPC
FMEA
RAID Log*
Risk Analysis*
Fault Tree Analysis
Traffic Light Assessment
Selecting & Decision Making
Break-even Analysis
Importance Urgency Matrix
Quality Function Deployment
Cost Benefit Analysis
Payoff Matrix
Delphi Method
TPN Analysis
Decision Tree
Pick Chart
Voting
Four Field Matrix
Critical-to X
Force Field Analysis
Portfolio Matrix
Kano
Decision Balance Sheet
Paired Comparison
Pugh Matrix
Prioritization Matrix
Pareto Analysis
Matrix Diagram
Planning & Project Management*
Daily Planning
PERT/CPM
MOST
RACI Matrix
Activity Networks
SWOT Analysis
Stakeholder Analysis
Project Charter
Improvement Roadmaps
PDCA
Policy Deployment
Gantt Charts
DMAIC
Kaizen Events
Control Planning
A3 Thinking
Standard Work
Document control
Lean Measures
OEE
Process Yield
Cost of Quality*
Project KPIs
KPIs
Capability Indices
Descriptive Statistics
Chi-Square
Nonparametric
Gap Analysis*
Probability Distributions
Hypothesis
Bottleneck Analysis
Histograms
Normal Distribution
Multivariate
Reliability
MSA
Graphical Methods
Scatter Plots
Understanding Performance**
Run Charts
5 Whys
Benchmarking***
Control Charts
Fishbone Diagrams
Data collection planner*
Sampling
How-How Diagram***
Check Sheets**
Interviews
Brainstorming
Questionnaires
Focus Groups
Affinity Diagrams
Data Collection
Observations
Mind Mapping*
Suggestion Systems
Five Ws
Group Creativity
Understanding Cause & Effect
ANOVA
DOE
Correlation
Regression
Multi-vari Studies
Root Cause Analysis
Data Mining
SIPOC*
Tree Diagram*
Relations Mapping
Implementing Solutions***
Best Practices
TPM
Automation
Mistake Proofing
Health & Safety
Simulation
Just in Time
5S
Quick Changeover
Visual Management
Product Family Matrix
Flow
Pull
Spaghetti**
Process Redesign
Waste Analysis**
Value Stream Mapping**
Value Analysis**
Process Mapping
SCAMPER***
Attribute Analysis
Morphological Analysis
Flow Process Charts**
Time Value Map**
Lateral Thinking
Flowcharting
IDEF0
Service Blueprints
Designing & Analyzing Processes

Pugh Matrix

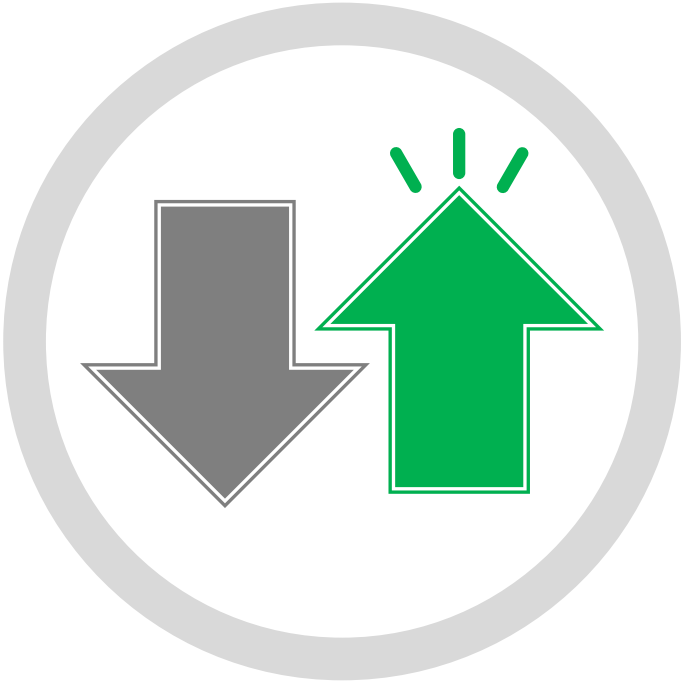
A selection method used to **compare** and **select** the best solution from a set of alternative proposals



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

Pugh Matrix

A form of
Prioritization Matrix



Pugh Matrix

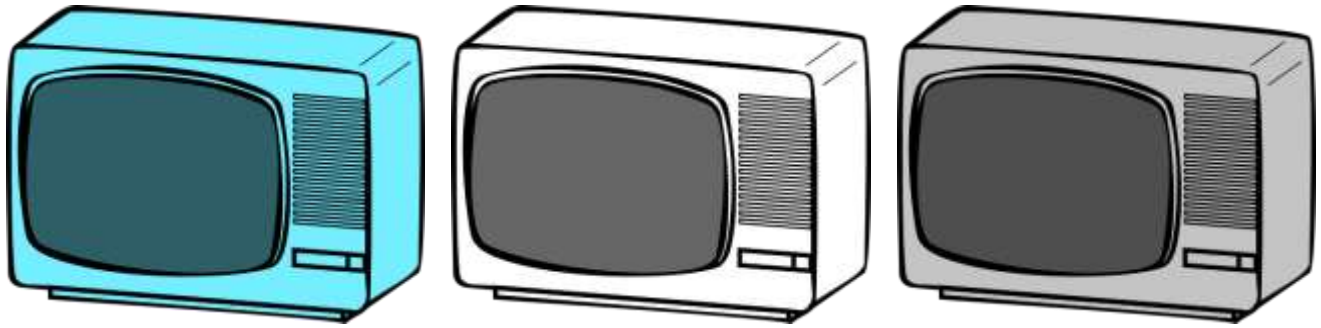
The alternative proposals are compared against **a standard . .**

The current solution that **already exists**

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

Pugh Matrix

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



Pugh Matrix

Benefits

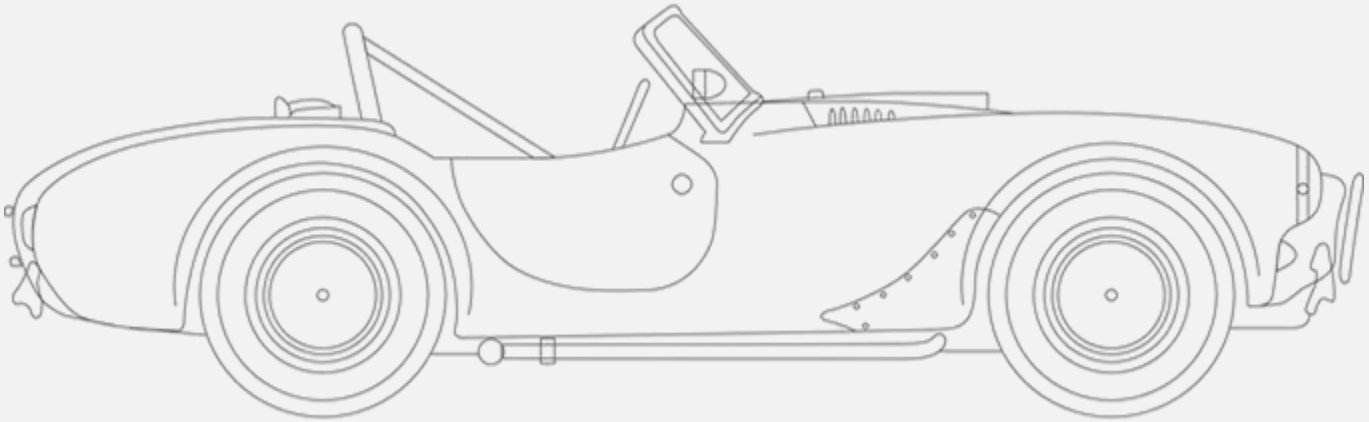
Does not require a great amount of **quantitative data**

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

Pugh Matrix

Uses

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



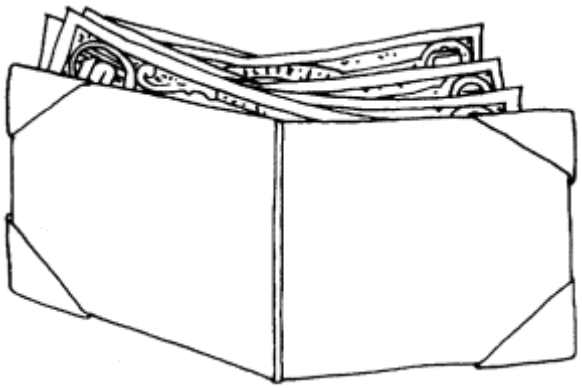
Pugh Matrix

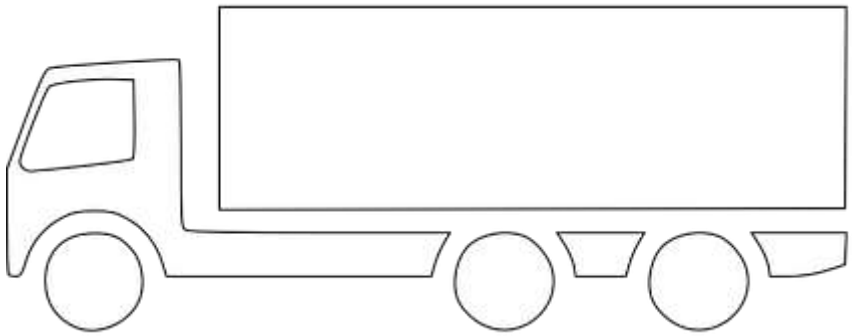
Other Uses

Deciding which **investment** to take

Deciding which **vendor** to select

Deciding which **improvement project** to initiate

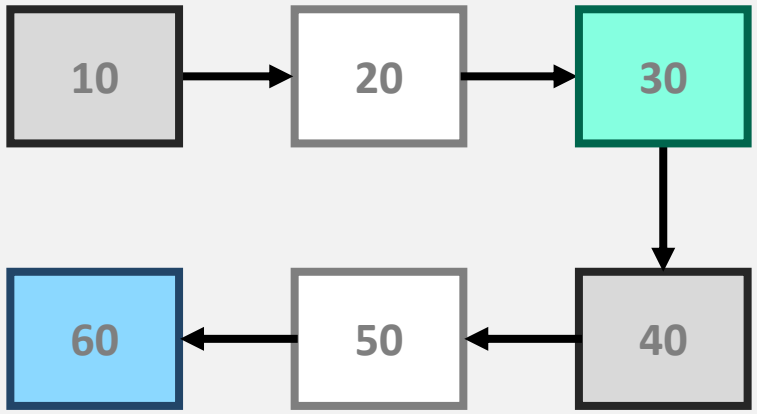




Pugh Matrix

Other Uses

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



Pugh Matrix

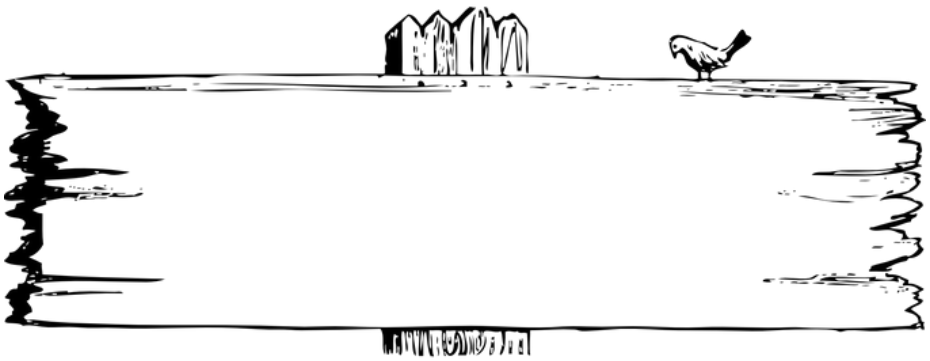
Developing a **list of criteria** is the first step before evaluating the alternatives

Criteria	Weight	Baseline	1	2
1				
2				
3				
4				
		Score		
		Rank		

Pugh Matrix

For evaluating **product designs**, use VOC requirements as the criteria

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



Pugh Matrix

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

Pugh Matrix

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		

Pugh Matrix

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		

Pugh Matrix

Scoring

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

→ Better than baseline

→ Worse than baseline

→ About the same

Pugh Matrix

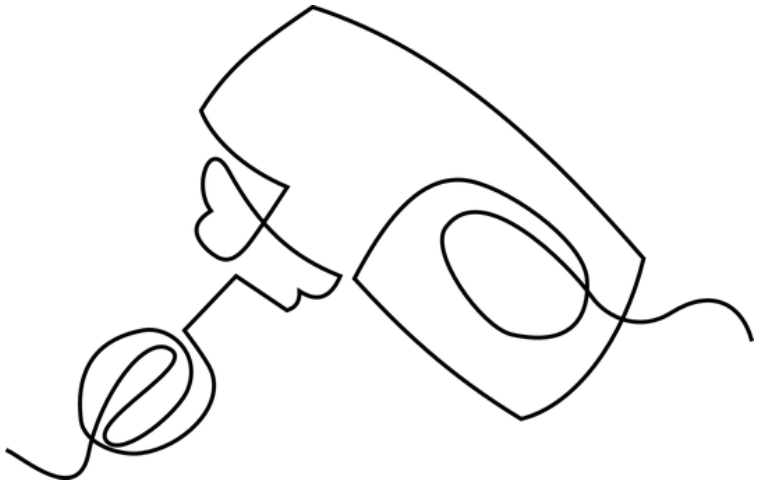
The final scores can be obtained by adding up the weighted scores for each alternative

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

Pugh Matrix

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

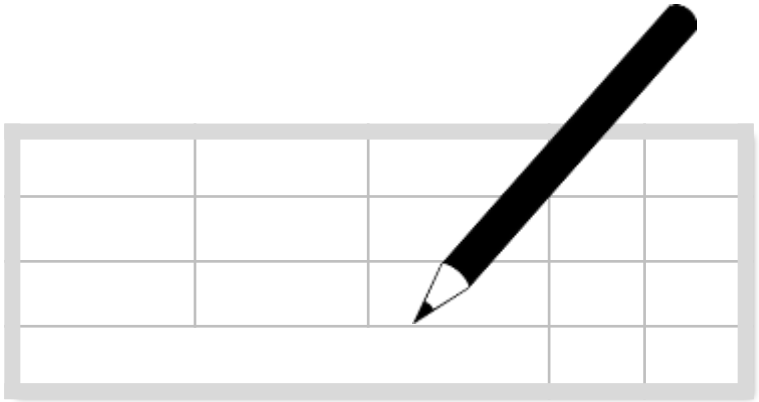


Pugh Matrix

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**

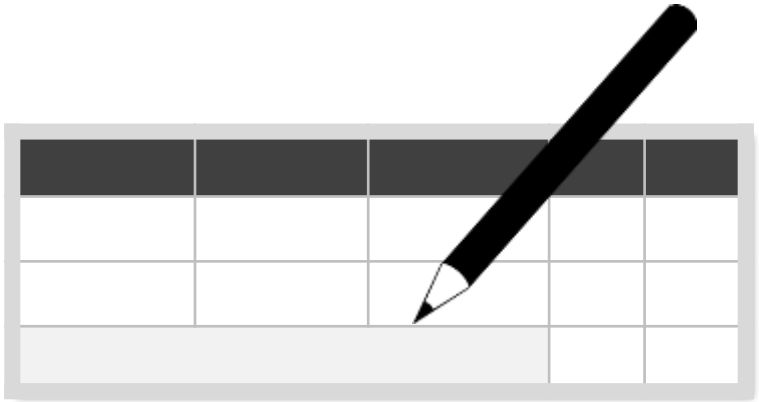


Pugh Matrix

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



Pugh Matrix

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

Pugh Matrix

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		