

The “4+1” Pillars of Value Engineering

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What is “Value”

Expressed as a simple formula;

$$\text{Value} = \text{Function} / \text{Cost}$$



- “*Value*” represents the perceived state of (social, functional, or monetary) worth.
 - Improvements present as *Value Creation*, and these are especially beneficial where opportunities are unknown, undefined, or unattained
- “*Function*” – To be increased, through improvement
 - Includes benefits such as simplicity, repeatability, versatility, capability, accuracy, reliability, speed, availability, etc
- “*Cost*” - To be minimised through correction
 - Opportunities include risk, waste, excess, lost opportunity, overcharging, missed profit, etc

Value Engineering - Definition



- *Value Engineering (VE) is the science of systematically creating value, and eliminating waste & excess - without impacting purpose or intent*
- VE fuses Engineering Logic with LEAN focus – to deliver sustained Value improvement outcomes
- It is important to realise is that Value Engineering is **NOT** limited to physical products – as it is equally effective within a Business when applied to any process or problem, plus developing people
- Historical Outcomes opportunities from my VE experience are;
 - c10% Cost saving
 - c25% in Time saving
 - Improved Risk

The 4 + 1 Pillars of Value Engineering



- My Value Engineering (VE) methodology is based upon the systematic application of “4 + 1” Key Pillars
- Levering each Pillar ensures that a Best Practice VE solution is designed, to optimise each opportunity
- VE may be applied independently on a project-by-project basis, though greatest benefit occurs when it is embedded into the culture of the business - with VE integrated within the team’s regular *Ways of Working*

Pillar 1

Design Optimisation



- Assess the various design criteria, to confirm that each aspect is appropriate, accurate (and correct) to achieve the target *Function*
- What improvements should be added, to Create Value through improvements, and achieve *beyond-target* Function eg from user feedback, innovation, or emerging Best Practice?
- Identify and eliminate any waste from the Design - that do **Not** add Value in achieving the Target Function eg excess physical, procedural or time aspects
- Any unnecessary features or requirements should be removed from the core Design (*These may be assessed as discretionary Options ie beyond the VE Design*)

Pillar 2



Substitution

Ideate alternatives offering better Value, for the inputs that remain as critical to achieving the Target Outcome

- Some examples include;
 - Using AI to write a report, and then making manual corrections where necessary – rather than manually writing everything
 - Focussing a Personal Development plan around the step improvement opportunities from acquiring *new* skills, Vs. diminishing returns from increasing existing expertise that already satisfies (or exceeds) demands
 - Ensuring that the longevity (= cost) of materials and components in a product do not exceed the lifecycle of the product. Cars are made from painted Steel - not Stainless Steel

Pillar 3

Quantity Rationalisation

Critically assess the quantities of the critical inputs, eg excess steps in a procedure, too much time allowed to complete a process, or too many lightbulbs in a room - to pare down to the minimum requirement to achieve the Target Function

- Quantity Rationalisation includes reductions in quantities or even deletions, to eliminate any waste or excess that is present – without compromising the Target Functionality
- Rationalisation can sometimes result in quantity *Increases*, eg if the original solution was insufficient

Pillar 4



Sourcing

Identify commercial alternatives to efficiently source, generate or procure the inputs that add value - in the quantities that are required

- Have you checked the pricing of long-term supply partners, or tendered to identify alternative or unknown suppliers?
- Are you paying a fair price based upon the annual quantities of products that you are buying?
- Should a new service be provided at a reduced introductory rate, to offset risk to the customer - until it is proven?

Pillar 5

...The “+1” Pillar

Value Assurance



- The critical sustain-wedge for any Value Engineering project is the Integrity checks that are inherent within *Each* VE Pillar
- This ensures that a Value Engineered outcome does *Not* compromise the purpose nor intent of the Target Function
- The inherent rigour of the VE process frequently identifies Improvement opportunities as by-products – which can take the VE solution beyond the Target Function. These can be;
 - Retained as Value Creation benefits that elevate the Function
OR
 - Removed from the Target Function, to minimise Cost
(Could be offered as an option?)

Summary



Value is the ongoing balance between Function and Cost

$$\textit{Value} = \textit{Function} / \textit{Cost}$$

Function is the outcome that motivates the customer & demand

Cost is not solely monetary, and includes risk, time perception, etc

Value Engineering is the science of systematically maximising Value – while ensuring purpose nor intent are never compromised

The goal of Value Engineering is to facilitate;

$$\textit{Profitability} = \textit{Function} > \textit{Cost}$$

What does *NOT* qualify as Value Engineering

Cost Cutting is a practice that does **NOT** meet the definition of Value Engineering!

- Cost Cutting sets out to reduce spend in isolation, limit process Inputs, or degrade quality or Function. This is often imposed indiscriminately, and occurs *without* due regard for the impacts upon purpose or intent
- This practice does NOT satisfy the *Value Assurance* Pillar, with Cost Cutting solutions rarely being intuitive, or sustained